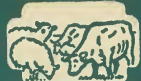


# WHAT THE WORLD EATS



WEBSTER AND POLKINGHORNE



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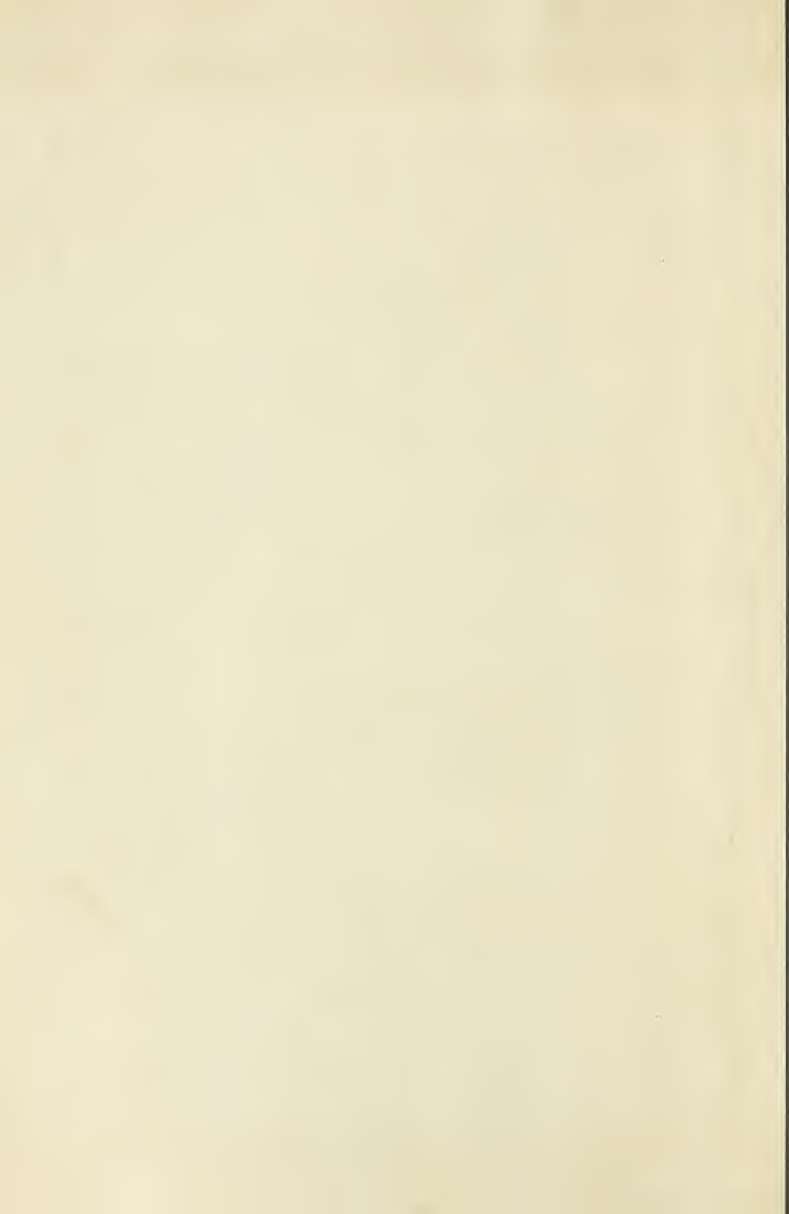




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WHAT THE WORLD  
EATS

BY

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## What the World Eats

MILLIONS of boys and girls, and millions of grown people all over the world sit down to breakfast, lunch, or dinner just as you do. Have you ever wondered what kinds of food the people have in strange, faraway lands? Do they have foods like yours? Or do they have something different?

Fruits and vegetables grow in almost every country. There are grains and meats almost everywhere, too. Nearly everywhere there is milk from one kind of animal or another. Some of these foods are just like ours, and some are as different as they can be. It is interesting to know about them.

Wouldn't it be fun to travel, both in our own country and in lands far across the ocean? Wouldn't you like to find out where your favorite foods come from and how they grow? Perhaps you would see some strange foods in other parts of the world that you would like to taste.

Do you sometimes wonder how enough food can be provided for all the children and all the

grown people in this great world? If you could make many long journeys you would find out the answer to such a question. In some parts of our country, you would see great fields of grain, wide pasture lands, or huge fruit orchards and plantations. Everywhere you would see truck farms, and vegetable gardens, some large and some small.

There is a book of pictures and stories called *Farmer in the Dell*, by Berta and Elmer Hader, that will give you a very good idea of everyday work on a farm.

In many cities you would see canning factories. In some places you would see fishermen and fishing boats. In others you would see steamships carrying fruit, grain, or meat. You would see trains of refrigerator cars loaded with fruit, vegetables, meat, or milk. You would see trains loaded with cattle and sheep. Sometimes you would see some of the cars full of hens.

Think of all the people who work on farms, in orchards, and in canning factories. Then think of all the others who drive trucks, the men who run trains, and the sailors on ships. Remember, too, the men who work in the markets. You will find it easy to believe that millions of people work to supply themselves and others with food.



Few boys and girls can travel to all the interesting places in the world. But you can all read books. So this book has been written to help you to answer most of the questions you might ask about your own foods, and the foods of people in other lands.

The stories take you to many parts of our own country. They take you to faraway lands, too. You have imaginary rides on horses and in automobiles, in trains, and in ships. You see animals, too, carrying loads of food, or working on farms. Some are camels, and some are water buffaloes and other queer-looking creatures.

These stories take you to see how foods look when they are growing, how they are prepared for our use, and how they are sent to our stores. They take you, too, to homes far across the ocean where you see brown children, yellow children, and white children enjoying foods often very different from yours.

And then, you are interested in the long-ago days, aren't you? Once upon a time, many of the foods we have today were unknown. There are stories that tell how people came to know them. Long ago, too, farmers had no machinery but they had interesting ways of doing work by hand.



We hope that the stories and pictures will tell you some new and interesting things about our everyday foods and about foods in other parts of the world, and in other times. At the end of the book you will find some suggestions about things you may like to do while you are reading, or after you have finished the stories.

# Our Favorite Fruits

**O**UR first stories are about fruits. Have you seen some fruits growing near your home? After you read these stories, you will know where other fruits grow.

You will understand how one part of our country depends upon other parts for some kinds of fruit.

You will know how the trees are cared for, how the fruit is picked, and how the crops are sent to market.

The stories tell also how very important such fruits as dates, figs, and grapes are to the people of other lands.





## Stories About Apples

IT WAS a cool evening in autumn. Bob and Grandfather were sitting in front of a big fire in the fireplace. They were eating apples and watching the pretty blazing logs. Soon Bob said, "Tell me a story, Grandfather. Tell me a true story."

"All right, Bob," said Grandfather, "I will; and since we are eating apples, I will tell you a story about apples.

"You know, Bob, that not long ago I went out West for a trip. I went to the State of Washington in the farthest northwest corner of our country."

"I know where that is," said Bob, "I can find it on the big globe."

Bob went to the globe and found the State of Washington. He showed Grandfather just where it is. Then Bob was ready to listen again.

### *Big Crops of Apples*

"Washington is a great apple-growing State," said Grandfather, "and our country is the great-

est apple-growing country in the world. Apples grow in cool lands everywhere. Big crops grow all over our own country except in the far South where it is too warm. Perhaps the apples we are eating came from Washington. Perhaps they came from New York, or Virginia, or Michigan, or Missouri.

“Well,” continued Grandfather, “when I was in Washington, I visited many large apple orchards and saw the trees loaded with beautiful ripe apples. I will tell you about some of the things I saw.”

The picking of apples is done very, very carefully. The men pick the apples from the trees and place them gently, one by one, in the big bags that hang from their shoulders. Then they put them into boxes. Sometimes they use baskets lined with a coarse cloth. This keeps the apples from bumping against the sides of the baskets.

Sometimes, before they are sent to the markets, apples are wrapped in tissue paper. After that they are packed in boxes or barrels. They are packed tight so that they will not roll around. Apples with broken skins would soon spoil. Then they are sent in trains and ships to markets all over the world.





“Of course,” said Grandfather, “our apples may have come from an orchard near our home. Apples grow in almost all parts of our country. But the biggest crops are raised in Washington, and the next biggest ones in New York, Virginia, Pennsylvania, and California. Can you find those States on your globe, Bob?”

“Yes, I can find them, Grandfather,” answered Bob as he looked on the globe again. “See, here is New York. It is across the country from Washington. Pennsylvania is near it. So is Virginia. But California is on the Pacific coast, farther south than Washington.”

*American Apples are Sent All Over the World*

“While you are looking at the globe, you might like to find some of the places to which our apples are shipped,” said Grandfather.

“Oh, yes, tell me some of the places,” said Bob, “and I will find them.”

“Of course, apples are shipped to all parts of the United States,” said Grandfather, “and to other countries. First find South America. We send many apples there.”

“Easy,” said Bob, “give me another place.”

“The West Indies,” said Grandfather.

“I have found them,” said Bob. “Now name some more countries.”

“Well,” said Grandfather, “we send apples to some countries that are on the other side of the Pacific Ocean. China and Japan are two of them. We send apples to Hawaii and the Philippines, too. These are two groups of islands in the Pacific. Hawaii is part way across this ocean, and the Philippines are not far from China. We also send apples to England and to other countries in Europe. You know where Europe is, don’t you?”

“Yes,” Bob answered, “I do. It is across the Atlantic Ocean. Germany and France and Italy are in Europe. So are Holland and Switzerland.

“Do we have so many apples that we can send some to all those countries?” asked Bob.

“Yes,” answered Grandfather. “We grow enough apples to give nearly a whole barrellful to every man, woman, and child in the United States.”

### *Our First Apple Orchards*

“When I was in Washington,” said Grandfather, “I visited the oldest apple tree in the State. It is more than a hundred years old. It grew from a seed brought from England by a sea captain. People there say that all the apple

orchards of the Northwest were started from the seeds of this one tree.”

“Did the apple orchards in New York and Pennsylvania and Virginia come from the seeds of that tree, too?” asked Bob.

“No,” said Grandfather. “The first apples in North America were brought to Massachusetts from England less than ten years after the landing of the Pilgrims. You know about the Pilgrims, don’t you, Bob?”

“Oh, yes,” said Bob. “They were people who came from England to live in our country over three hundred years ago. I have read about them. When they came here, there were Indians living in all parts of our country.”

“Yes,” continued Grandfather. “There were no big cities with factories and no great farms such as there are now. There were no railroads, and no steamboats on any of the lakes and rivers. There were no roads and no automobiles. And there were no orchards.

“No apple trees grew in our country then. But the Pilgrims wanted apples, so they had seeds sent from England. They planted them, and that was the beginning of apple-growing in our country.”

The Pilgrims lived in Massachusetts, in the

northeastern corner of our country. Massachusetts is one of the six States that make the group called New England.

Some of the children of the Pilgrims and some of the people who came from Europe later moved to the western part of our country. They had to go on horseback, or in big covered wagons. These were pulled through the forests and over the plains by horses or oxen.



People also traveled on the water. They used canoes or boats which they paddled or rowed or pushed along with poles.

These first people who moved to the West were called pioneers. The pioneers cut down the forests and built log cabins. After they had cleared the trees from a piece of land, they planted

gardens and farms. They planted apple orchards, too.

### *Johnny Appleseed*

There was a man who helped these pioneers and their families in a way that you may guess from his nickname. They called him Johnny Appleseed. He collected apple seeds from the cider mills. Cider is a drink made from the juice of apples.



Johnny Appleseed loaded the seeds in his wagon and drove out where the pioneers were making their homes. He gave them apple seeds so they could plant orchards whenever they wished.

Sometimes, Johnny Appleseed started out with a canoe. Sometimes he had two canoes tied



together. He filled them with apple seeds. Then he went paddling down one river after another. Sometimes he camped in the woods all by himself. Sometimes he came to a pioneer cabin. Then he tied his canoes to a tree on the river bank. He knocked at the cabin door and often asked for a slice of bread and a little honey to spread on it.

Sometimes he asked if he might sleep in the cabin overnight. He liked to lie on the floor in front of the open fire. He always paid for his food and his night's rest with a big bagful of apple seeds.

Wherever Johnny Appleseed found a piece of ground where he thought apples would grow well, he planted some of his seeds. He believed that before many years, orchards would grow and that people would want to build their homes near them.

For forty years Johnny Appleseed tramped all over Ohio, Indiana, and parts of Illinois. He traveled hundreds of miles, taking care of the trees that had grown from his seeds.

When Johnny Appleseed died, about a hundred years ago, someone said that he had done more for the West than any other man of that time. Even today a few of the very apple trees he planted are still bearing apples, though apple

trees usually bear fruit for only about thirty years.

As far west as Iowa, farmers still proudly point out healthy old apple trees that grew from some of Johnny's seeds brought by pioneers many years ago.

Boys and girls now have many different kinds of apples to eat. Each kind has its own name. How many kinds do you know? Some of the favorite kinds are Baldwin, Ben Davis, Delicious, Golden Russet, Greening, Jonathan, McIntosh, Missouri Pippin, Northern Spy, Red Astrachan, Rome Beauty, and Winesap. Which is your favorite?

### *Apples in Long-Ago Days*

Boys and girls in other lands had apples thousands of years ago. These apples were small ones, about like our crab apples. In the ruins of the huts of the lake-dwellers in Switzerland, pieces of partly burned apples have often been found.

The lake-dwellers built their houses on strong poles driven into the bottom of the lake near the shore. The water was not very deep there, so the ends of the poles reached above the surface. The lake-dwellers built platforms on the poles,

and these held up their huts. They built their huts out over the water so that their enemies and wild animals could not attack them easily. Sometimes the huts caught fire. The floors burned through, and the dishes of apples and other things fell into the water. They sank into the mud and were buried for many, many years. When people dug out these buried things, they learned much about the life of these ancient men and women. We shall tell you more about the lake-dwellers in another story.

# The Rose Family

PEOPLE have two names and sometimes more than two. The important names are the first and the last names. Children are called by their first names. The last name is the family name.

Plants have a family name just as people have. Roses belong to the rose family. And just as you may have cousins whose family name is the same as yours, so roses have cousins whose family name is the same as theirs.

You may wonder why the rose family has a place in a book about foods. But many of our favorite fruits belong to the rose family. Apples, pears, quinces, peaches, plums, cherries, apricots, blackberries, and raspberries all belong to the rose family.



Have you ever noticed what is left on the stem of a rose after the flower has faded and dropped

off? A green seed pod is left. After a while this seed pod, or hip, turns red. This is the ripe fruit of the rose. It is something like a tiny apple. In it are the seeds from which new roses may grow. If you have seen rose hips, you are not surprised to hear that an apple is a cousin to a rose.

### *Some Fruits Grow on Bushes*

Some of the fruits in the rose family grow on bushes, just as roses do. Blackberries and raspberries grow in this way. If you have ever picked blackberries, you know that they have thorns just as roses do. They have fragrant blossoms in the spring. Later the fruit grows and ripens. We like red raspberries, and we like big juicy blackberries.

### *Some Fruits Grow on Trees*

Pears and quinces look much like apples. They grow on trees that look much like apple trees. They look like apples inside. If you cut open an apple, a pear, and a quince, it is easy to see that they belong to the same family. Their seeds are much alike and they grow in much the same way.

Plums, peaches, apricots, nectarines and cherries also belong to the rose family. Each of



these fruits has inside it a stone called a pit. The pit holds the seed.

Do you know any fruit that is nicer than a peach? Perhaps you like its little cousin the apricot almost as well. The next time you taste a peach, it will be interesting to remember that this is a fruit that the boys and girls of China enjoyed as long as four thousand years ago.

Peaches were one of the first fruits planted after the white men came to Virginia, a few years before the Pilgrims came to Plymouth, in what is now Massachusetts. Now our country raises more and better peaches than any other part of the world. California peaches and Georgia peaches are especially famous.

Apricots first grew in Asia. The name means "ripening early," and reminds us of the month named April, which, in so many places, is the season of opening buds.

### *Fruit Orchards in Blossom*

One of the loveliest things to see anywhere is an orchard when the fruit trees are in bloom.

In California there are many very large orchards. People are glad to make long journeys to see them in blossom. There are acres and acres of delicate white blossoms of plums, and

pink and white blossoms of peaches, apricots, pears, apples, cherries, and other fruits. The orchards seem like fairyland with their thousands of flowering trees, and the air is filled with a sweet smell.

Many towns in California and in other fruit-growing States hold festivals at this season. Some of them are famous all over the world. Perhaps, near where you live, the fruit-growers have festivals in the spring. Have you ever been to one?

When the fruit is ripe it has to be gathered and shipped to the markets or to the canneries. This is a busy time.

It is a good thing for the people who own the orchards that not all fruits ripen at just the same time. The cherries are ready before the peaches and the apples and the pears. They are smaller and it does not take them so long to ripen.

We see these fruits in the roadside markets and in the markets in the towns. How pretty and attractive they look when they are arranged nicely in boxes or baskets! And how good they taste when we buy them and take them home!

## Stories About Oranges

IT WAS a summer afternoon. Jane was hot. She was too hot to play. She was too hot to read. She was too hot to sleep. She was too hot to do anything but lie in a hammock on the shady porch. She was wishing she had a good cool drink of orange juice, or lemonade, or lime juice.

Just then Mother came with a tray. On it were two tall glasses of ice-cold orange juice, one for Jane and one for Mother.

“How good this orange juice is!” said Jane as she took a big sip. “I was just wishing for something cool to drink, and I like orange juice best of all.”

“Yes,” said Mother, “it does taste good, doesn’t it? We ought to be glad that we can have it. When your grandmother was a little girl, she did not have many oranges to eat, or much orange juice to drink.”

“Didn’t oranges grow in America then?” asked Jane.

“There were a few orchards,” answered Mother, “but oranges were expensive. The very first oranges in America were planted by people who came from Spain about seventy years after Colum-

bus discovered America. But it was more than three hundred years after that when the first big crop of oranges was raised in California. More oranges are grown in that State now than anywhere else in the world.”

“Where else do they grow?” asked Jane as she took another sip of her orange juice.

“They grow in Florida, in Cuba, in Spain, in Japan, in China, and in Italy,” answered Mother. “They grow in some of the countries in South America. One of these is the very large country named Brazil, and another is the tiny country named Paraguay.

“Oranges grow in other lands where the summers are long and hot. Some of these are near the Mediterranean Sea. Others are in the West Indies, or in the southern part of Africa, or in Australia.

“Like apples, oranges have been raised for thousands of years. The first ones probably grew in China. They were not much larger than a big marble, and not very sweet. The people called them ‘chus.’ This word sounds like ‘chews.’

“Many years later, the Arabs learned about oranges. They lived in a country named Arabia, near the eastern end of the Mediterranean Sea. When they made journeys to Spain, they took

oranges with them to eat and to sell. Some of the Arabs made their homes in Spain and planted oranges there."

"Do oranges grow here in Missouri?" asked Jane. Missouri is the State where Jane lives.

"No, Jane," said Mother. "We raise other fruits, but no oranges."

"Why don't they grow here? We have long, hot summers," said Jane.

"Do you remember how cold it was here last winter?" asked Mother. "Orange trees cannot stand cold weather. If you could visit an orange orchard, you would see that these trees are different from the fruit trees we have in Missouri.

"They are evergreen trees, but their leaves are not long thin needles like those on the pine trees, or short thin ones like those on Christmas trees.

"The leaves of orange trees are the shape of elm leaves or apple leaves. They have little pointed tips. In color they are dark green and very shiny. They smell almost as sweet as the lovely white waxy blossoms that come on the trees each spring.

"Orange trees are different in many ways from apple trees, Jane. You remember seeing Grandfather's apple trees. We have seen them when the apples were ripe and rosy. And we have



seen the trees at Christmas time when they were bare. The leaves had all fallen then.

“If we could visit an orange orchard at Christmas time, we should find the leaves still on the trees. Orange trees do not lose all their leaves at one time. The same green leaves may stay on a branch for a year, or for three or four years.”

“I should like to see an orange orchard,” said Jane.

“Perhaps some day we can go to Florida or California for Christmas,” said Mother, “and then you will see oranges growing.”

“That would be fun,” said Jane, “but I should like to see the orange trees in blossom, too.”

“You might see blossoms at Christmas time,” answered Mother. “Sometimes it is possible to see blossoms, green fruit, and ripe fruit all at once on an orange tree.”

“That is different from the way apple trees behave, isn’t it?” said Jane. “Tell me more about oranges, Mother.”

So Mother went on with her story. These are some of the things she told Jane.

### *Taking Care of the Orchards*

Orange trees need a great deal of sunshine, just as boys and girls do. Like them, too, the trees

need a great deal of water. So in an orange orchard, we find the trees growing in good brown soil or in sand.

No grass is allowed to grow around the trees or between the rows. This lets the water sink down to the roots of the trees better than it would if grass grew all around. The long roots of the trees go deep into the earth and suck up the moisture.

In nearly all parts of California, the weather in summer is often dry, and there is a great deal of hot sunshine. There is not enough rain to supply the water the trees need.



Men have dug canals, sometimes a hundred miles long, to bring water from lakes, rivers, and mountain streams. Ditches bring the water from these canals to the orchards. The water runs

between the trees and around the trees. In this way plenty of water is brought to the trees.

Once in a while there are cold nights when the frost might nip the blossoms and the fruit. Then the men who take care of the trees have to do something to keep them warm. There are thermometers that ring a bell when the mercury drops close to 32 degrees. This is the point at which frost comes.

The men hear the signal and start fires in the little oil-burning stoves that stand between the rows of trees. These make a thick blanket of smoke which protects the trees from the cold.

All kinds of fruit trees must be protected from insects, too. Some kinds of insects are killed by spraying the trees with poison. Some of the insects that attack orange trees have to be killed in a different way.

About once a year the men go through the orchard with a gas-making machine. They spread a canvas sheet like a tent over each tree, one after another, and pump it full of gas. This is usually done at night because the gas would hurt the tree if it touched it in the bright sunlight.

### *Picking Oranges*

It is interesting to watch the work of picking

oranges. You will probably be surprised to know that in California many of the men who pick the oranges are Chinese. They have long thin fingers, and they are very clever in picking oranges. They wear gloves so that their fingernails will not scratch the skin of the fruit. The skin is not so tough as you might think. It is easily hurt. When the skin is cut or scratched, the fruit is likely to rot.

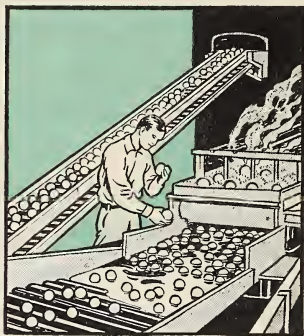
The pickers do not pull the oranges from the stems as apple-pickers do. Instead they use sharp clippers, something like scissors, that cut the stem close to the little button that you see on an orange. Not even a small piece of the stem is left, because it would rub against other oranges and scratch them.

Each picker has a sack hung over his shoulders. When he has filled it, he sets it down in a big box. Then he unbuttons a flap at the bottom of the sack. Instead of pouring the oranges into the box, he pulls the sack up and away from them. The oranges slide gently into the box.

### *Packing Oranges*

Before they are packed, oranges are given several baths in warm water and soapsuds to make them perfectly clean.

In the buildings where oranges are packed, there are other interesting things to see. There is a machine that sorts them by sizes. As the machine sorts them, the oranges drop gently into canvas bins or holders. By-and-by each bin is full of oranges which are all the same size.



Then the packers wrap each orange separately in tissue paper. They wear gloves, just as the pickers do.

“Perhaps you have noticed, Jane,” said Mother, “that the paper wrappers around the oranges have the name of the orchard where they grew printed on them. And sometimes we read the name of the orchard right on the oranges themselves.”

“Yes,” said Jane, “I have noticed a name on an orange. How do people print on oranges, Mother?”



“They use a clever machine,” answered Mother, “that prints with a soft rubber stamp. It does this very gently so as not to hurt the oranges.

“Sometimes oranges are coated with wax to make them shine, and to protect the skin.

“Last of all the oranges are put, one by one, into crates such as we see in the stores. Each crate is the same size, one foot wide, one foot deep, and two feet long. It is divided in halves by a piece of wood across the middle.”

“Yes, I know,” said Jane, “because I have used those boxes for making chairs, and for bookcases, and for cupboards for the dishes in my playhouse.”

“It takes only eighty big oranges to fill one of these boxes,” said Mother, “but some oranges are so small that a crate will hold more than three hundred. The covers of the crate are not nailed on with a hammer. Do you know why, Jane?”

“Oh, yes,” answered Jane, “the hammer might hit the oranges and hurt them. But how are the covers fastened on the crates, Mother?”

“The nails are pressed in by a strong machine which also fastens a metal strap around the middle of the crate,” answered Mother. “Then the oranges are ready to be sent away. They are sent in refrigerator cars all over North America,

and in ships to all parts of the world. All the time they are traveling, the temperature must be kept exactly right.

“The oranges are thoroughly cooled before they are loaded into the train or the ship. During a long land journey the ice in a refrigerator car melts and the train must often stop to get more. The storage rooms on a ship have cooling machinery that keeps them cool even on a long voyage.”

“When we get oranges from the store, we wash them and put them right into our refrigerator. They stay cold till we want to use them,” said Jane.

“That was an interesting story, Mother. Isn't there something more to tell me about oranges?”

“Well, I have just one more story for you,” answered Mother.

### *Oranges in Paraguay*

“Several years ago Father and I went to Paraguay in South America. That country was first visited by people from Spain about four hundred years ago. It has no seacoast, so no ocean steamships can land there. It has few roads and only one railroad. But it has a great many oranges which it wishes to send to far-away countries just as we do.”

“How are the oranges sent, then, Mother?” asked Jane.

“Oranges are hauled short distances in ox-carts. They are not packed in boxes. Sometimes there are five thousand oranges in one load,” said Mother.

“The oranges are dumped from the ox carts just like so much dirt. The growers do not take as good care of their fruit as we do.

“In the orchards we saw many oranges left rotting on the ground because the growers cannot sell all they raise. In some markets we could buy twenty oranges for a cent.

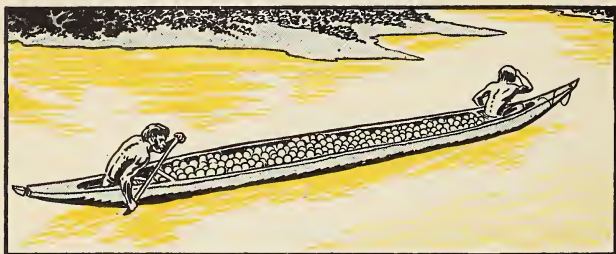
“When the growers send their oranges longer distances, they have to load them on river boats. Some of these boats are different from the river boats that we have in Missouri. They are called dugout canoes and are made from the hollow trunks of big trees. There are rafts, too.

“We saw oranges piled high on these canoes and rafts. We saw the loaded boats going along rivers, and we saw them being loaded at wharves in the little towns on the river banks.

“There are some river steamers, too. These boats carry large cargoes, or loads, of oranges to neighboring countries.

“The loading was done by women. They put

the fruit into round baskets. When the baskets were full, the women lifted them to their heads and balanced them there. Then they carried them to the steamboat. They trotted along board walks with these baskets of oranges on their heads.



“It was fun to watch them going back and forth, and back and forth. Each time they reached the boat, they emptied their baskets inside a fence of wire netting, about as high as a man. It was along the sides of the boat. What a pretty cargo those golden-colored oranges made!

“Sometimes we saw narrow rivers that were full of oranges floating on the water. Small boats could hardly get through them. These oranges had been thrown away. It seems too bad that so much good fruit has to go to waste, just because the people cannot get it all to the markets.”

“Thank you, Mother. That was an interest-

ing story, too," said Jane. "I wish I could see those oranges floating around the rivers in Paraguay. I should like to see the women loading the boats, too."



## The Citrus Family

YOU remember that apples belong to the rose family. Oranges and other fruits belong to a family whose name is citrus. If you stop for a minute and think of fruits that look like oranges, you will be able to name some of the other members of the citrus family.

### *Cousins of Oranges*

Grapefruit, tangerines, lemons, limes, and kumquats are all cousins of oranges. There are many ways in which these fruits are alike. They all grow on trees that have evergreen leaves. They all grow where there are long warm summers, and where the winters are not very cold.

All fruits of the citrus family are covered with skins or peels which can be taken off in much the same way. All of them are divided inside into little sections which hold the fruit and the seeds. In tangerines, oranges, and grapefruit, it is easy to pull these sections apart and to eat one at a time.



## *Grapefruit*

Have you ever wondered where grapefruit comes from? If you live in Florida or California or Texas you know. Most of our grapefruit comes from Florida, but some of it comes from California or Texas, or from the West Indies.

Until a few years ago, grapefruit trees were used in Florida mostly as ornaments in gardens. The big, pale-yellow fruit grows in clusters a little like huge bunches of grapes. This is the reason for the name. After a while people began to eat this fruit and to enjoy it.

Travelers who came to Florida to enjoy the warm winters liked them, too. When these visitors went home, they wrote back to Florida for some of the grapefruit they had enjoyed there. In this way, more and more people came to know about this fruit and to ask for it.

So the people who lived in Florida had to plant more trees and grow more fruit to send to other parts of the country. Now it is used almost everywhere. People enjoy it as a fruit and in salad. They like grapefruit juice, too.

## *Lemons*

Oranges and grapefruit are picked when their color shows they are ripe enough to pick. But

lemons have to be the right size. The pickers take rings with them when they go into the orchard to pick lemons. If the lemons go through the rings, they must stay on the trees a while longer. But if the lemons will not go through the rings, they are big enough to be picked. The next pictures show, on the left, a grapefruit tree; and on the right, the way lemons are picked.



Pickers go to work in the groves or orchards every six weeks. They pick the lemons that are large enough, but leave the small ones on the trees.

In the orchards in California we can see buds, blossoms, and fruit on the trees all at one time.

Most lemons are picked before they have changed their color from green to yellow. They

are not wholly ripe, but they keep better if they have not ripened on the tree. For some time before they are sent to market, they are kept on trays in cool dark rooms while they finish ripening. They are wrapped in tissue paper for shipping, just as oranges are.

We like lemons in lemonade, lemon pies, and lemon jelly. We like the candied rind, or peel, too.

Lemons grow in Spain, in Portugal, in Italy, and in other countries on the Mediterranean Sea. Nine out of every ten lemons grown in our own country come from California. Some grow in Florida, Texas, and Arizona, too.

### *Tangerines, Kumquats, and Limes*

Tangerines are much like oranges and they grow in the same way. They have thin skins and are easy to peel. Children like them in their noon lunches at school. They are good in salads, too. They are not so juicy as oranges.

Kumquats look like tiny oranges. They grow on trees that look like the orange trees. They are a bright orange in color and they taste good. The Chinese people like to preserve them in sugar and eat them as candy. We use them as we use oranges, just as a fruit.

Limes grow in Florida and the West Indies. They grow also in Mexico and in the countries of Europe around the Mediterranean Sea. They are used to make flavoring for candy. The juice is sometimes used on cantaloupes, to add to the taste. Fresh green limes make good limeade which some people like as well as lemonade. It tastes very refreshing when the weather is hot.

Perhaps you would like to make a map of the world to show where citrus fruits grow. You can make tiny pictures of the different ones, color them, and paste them on your map.



## On Horseback Through a Banana Plantation

BANANAS are probably another of your favorite fruits. Have you ever wondered where they grow, or how they grow?

Here are some other questions about bananas that this chapter will answer. Perhaps you can answer some of them already. In how many ways are bananas different from other fruits? Do they have seeds? Do they grow on trees, as so many fruits do?

Of course you know the little brown seeds of apples and pears, the middle-sized whitish seeds of oranges and lemons, and the big hard stones of cherries, plums, and peaches. Have you found any such seeds in bananas? From what, do you suppose, do bananas grow?

The best place to learn about the raising of bananas is in almost any of the little countries of Central America, just south of Mexico, or in the West Indies. Let us imagine that we have taken a short sea voyage in one of the pretty white steamships that bring bananas to our country, and that we are visiting a banana plantation.

The manager tells us that the easiest way to see the plantation is on horseback. We like to ride horseback, so we are pleased with his invitation.

As we are waiting for our horses, the manager tells us some interesting things about bananas. He says that they will grow only where the weather is hot and wet. They need a great deal of rain and they cannot stand frost.

Central America is just right for bananas because there is plenty of rain. There is three times as much rain as we have anywhere in the United States except in the very tip of Florida. The weather is like our hot summer days. It is never freezing cold.

Here are our horses! We mount them and ride off with the manager to see for ourselves how bananas grow. As we ride along, the manager tells us that bananas can be planted any month in the year. There is a crop every month. But the largest crops come in spring and summer.

Now the manager is stopping his horse, so our horses stop, too. We see some planters putting queer-looking things into the ground. They remind us a little of huge potatoes. The planters are cutting them into good-sized pieces, each of which has a spot that is called an eye.



The planters dig deep, wide holes in the ground and put the pieces in the bottom with the eye facing down. The new banana plant will grow from that eye. The roots will go down, and the bright green shoots will come up.

### *Young Banana Plants*

After watching the planters for a few minutes, we ride on to a field where some of the young shoots are coming through the ground. How green and pretty they look! The manager tells us they will grow very fast.

In three months they will be as high as a man's head.

In three months more they will be twice as tall as a man. In another three months they will be more than three times as tall as a man.

The fruit begins to form when the plant is about a year old. It is ready to cut three or four months later.

The manager says that all the time a banana plant is growing, it keeps sending out from the bottom of its stalk little green shoots called suckers. After an old plant has borne its fruit, it is cut down. But the strongest of the suckers is saved. It is allowed to grow. Before long it becomes a plant itself, ready to bear fruit.

Sometimes the workers plant these suckers in a new place, and sometimes they let them grow in the same place where the old plant was. But after a banana plant has borne just one bunch of fruit, it is always cut down and a new banana plant is grown in its place.

Now we ride on again. This time we go between the tall banana plants. It is shady, and when we look up at the long wide leaves, we see that they make a roof across the path.

### *Bananas Do Not Grow on Trees*

If we speak of banana "trees," the manager tells us that they are not real trees at all. Their trunks seem to be thicker than the trunks of most fruit trees at home, but we discover that they are not wood and that they have no branches. The trunks, or stalks, are simply thick bundles of leaves rolled up together very tightly.

We stand up in our stirrups and we can just about reach the place where the first leaves grow out from the stalk and bend over. The largest leaves are higher up. They are twice as long as a tall man, and two feet wide. The tallest plants grow to be as high as a house with three stories.

A banana plant has a blossom that looks a little like the bud of a very big purple tulip.

It is as long as a man's hand, and as big around as his arm.

In the fruit stores at home, we have seen the bunches of bananas hanging with the tips of the fruit pointing toward the floor. How surprised we are to find that they are upside down! On the plants each banana points toward the sky.

One of the workers holds up a good-sized bunch of bananas for us to look at. We count and find that it has ninety bananas. We notice that they are in nine clusters, or small bunches of five or ten or even more.

We see that each of these little bunches grows out of the stem in the center. The manager tells us that each of these clusters is called a hand, and each banana in a cluster is called a finger. Some bunches have as many as one hundred and forty bananas.

### *Harvesting Bananas*

We have come to a place where the workers are cutting bananas. We are surprised to see that all the fruit they cut from the plants is green and hard instead of yellow and soft. If a single banana turned yellow on the plant, the whole bunch would rot before it reached the United States.



We find it interesting to watch the harvesting of bananas. The workers are big strong Negroes. They work in groups of three.

First comes a man with a long pole which has a sharp heavy knife at the end. This man is the cutter. He chops about halfway through the trunk, or stalk, of the plant two or three feet below the bunch of bananas.



The stalk bends slowly over, and the cutter pushes against it with his pole to keep it from falling. He steers the heavy bunch of bananas until it swings gently down upon the shoulder of another man, known as the backer. Then the cutter chops all the way through the stem, and the backer marches off, carrying the bunch on his shoulder or his back.

The bunches weigh sixty pounds or more.

When the backer comes to the road, he passes the bunch to a third man. He is known as the mule man. He leads the mules.

The bunches of bananas are laid upon the backs of the mules, and away they go to the railroad which is not far from the plantation. There they are piled up beside the tracks. Soon, along comes a train which takes them away to the wharves where they are loaded into the fruit ships.

The manager tells us that in the larger plantations, instead of having mules carry the bananas on their backs to the railroad, there are narrow tracks for small freight cars. Sometimes these cars are pulled by mules and sometimes by oxen. And sometimes they are pulled by little steam engines. Of course, these cars can carry many more bunches at a time than a large number of mules can.

And now our horseback ride is over. We have seen a banana plantation. We are sorry to leave the horses that have given us such a good ride. We are sorry to leave the manager who has told us so many interesting things. But we must hurry to our train. We are going to the wharves, to see how a banana boat is loaded.



## *Loading a Banana Ship*

Here we are at the ship! We are surprised to be told that it will be loaded full of bananas. It will not carry any other kind of fruit. Other fruits, if they were packed with the bananas, would spoil. Banana ships have machinery that keeps the storerooms at the same temperature all through the voyage. The bananas would spoil if they got too hot or too cold.

Now let us watch the loading of this ship. There are two ways in which this is done. The newest and fastest way is by machinery. The big loading machine keeps a canvas belt, with pockets all along it, running into the ship's hold. The hold is the lower part of the ship. It is there that the bananas are carried.

A bunch of bananas is put into each of the pockets on the belt. The filled pockets go down into the ship and come up empty. Many men in the hold are kept busy taking the bananas out of the pockets and packing them into the hold. We go into the hold and see the big bins full of bananas.

When the ship is loaded, it sails out on the blue water. It is going to the United States. It is going where we shall be going after a while. But we are not going home just yet. We are

going first to Jamaica, one of the islands of the West Indies. So we get on a ship going to that island.

In Jamaica we see bananas growing in just the way we saw them in Central America. But the people have a different way of loading the banana ships. They do not do it with machinery. They have an old-fashioned way. There are a great many people in Jamaica. They work for small pay, and it is cheaper to hire them than it would be to buy and run machinery.



We find a long train of banana cars standing in a shed on a wharf. Outside, across the wharf, is the banana ship with big doors in the side.

All day long, and sometimes all night long, colored men and women go hurrying from the

cars to the ship. Some of them carry a bunch of bananas on their shoulders. Some of them carry a bunch on their heads. They sing and chatter noisily as they work. When we wish to say anything to each other, we have to shout.

Although these men and women work hard, they do not seem to get tired. They circle back and forth in a long line. Each one keeps his place. As soon as he gets back from carrying one bunch of bananas into the ship, he is given another.

We see a white man sitting on a sort of ladder. The line of banana carriers always walks in front of him. Every now and then he swings a knife that has a big shiny blade. We can't imagine what he is doing. We step closer to see. Then we discover that whenever this man swings his knife, he chops off a piece of the stalk from a bunch of bananas.

He tells us that the bunches all have to be as nearly the same length as possible. If they are not they cannot be fitted into the bins in the ship as they should be. If the stems were left too long, they would scratch the bananas on the other bunches and make them rot.

We notice that the men and women all have little cloth bags tied around their necks. For

each bunch of bananas they carry, they are given a round piece of brass about half as big as a nickel. They drop these pieces into their bags. When they finish their work, they count their pieces, and for ten of them they are paid one cent.

We see many interesting things in Jamaica, but how good it seems when we get on a ship to go home again! We are glad that we live in the United States. But we are glad that we have seen how bananas grow and how they are shipped.

Now, when we see the long express trains with many banana cars on them, we shall think of Central America and Jamaica. We shall think, too, of other countries that send us bananas. We shall know how the banana plantations look in Cuba, in Mexico, in the Philippines, and in other lands.

### *Bananas in Long-Ago Days*

The first bananas in the world grew in India, in the southern part of Asia, almost twenty-five hundred years ago. Many years afterward, the Arabs, who were great travelers and traders, took some to Africa, just as they had taken oranges to Spain. From the map you can see that

Arabia, the home of the Arabs, is not very far from India. The next step in the banana's journey around the world came when sailors carried some roots from Africa to the Canary Islands. These islands are near the northwestern coast of Africa. They are not far from Spain.

A few years after Columbus discovered America, a Spanish priest planted bananas in the West Indies. Find these places on the map, and you will see that bananas traveled halfway around the world before they found the place where they now grow best.

When your grandfather was a boy, he probably did not have bananas very often. In some parts of our country, in those days, nobody ever had even one.

The first ship bringing bananas came to the United States about eighty-five years ago. A man who made paper had gone to Jamaica to get bamboo to use in his factory. In his little three-masted schooner he brought two hundred and fifty bunches of bananas home to sell.

Now, enough bananas are brought to our country every year to give seventy apiece to every man, every woman, and every child.

*Green Gold*, by Berta and Elmer Hader, is a

book that will tell you more about bananas. It has many colored pictures.

Another book to enjoy while you are reading this chapter is *Children of Banana Land*, by Melicent H. Lee.



## Pineapples in Hawaii

WE MADE a voyage to Central America, to see big banana plantations. Now let us go to Hawaii to see some big pineapple plantations. Pineapples have that name because they look like the cones on a pine tree. Hawaii is a group of islands near the middle of the Pacific Ocean. These islands belong to the United States.

Of course, there are other places where we can see pineapples growing. We saw some small plantations in the West Indies.

If you live in Florida, you may have seen pineapples growing there in sheds covered with cloth. If you live in California, you may have seen them growing out-of-doors. But more pineapples grow in Hawaii than anywhere else in the world, so this is the most interesting place to visit to see them growing.

You will be interested to know that some of the big pineapple plantations in Hawaii grew from a small one started by an American. As a little boy, he had loved to raise his own vegetables and flowers. In school he learned what a beautiful

place Hawaii is. When he was old enough, he went there and planted his first pineapples.

Let us go to San Francisco, in California, and get on one of the big ships that sail to Hawaii.

Soon after we reach the islands, we go to a pineapple plantation. If we stand in the middle of this plantation, we can see rows and rows of plants stretching away on every side as far as our eyes can see.

The fields look as if they are covered with a carpet striped with reddish-brown and green. The brown is the earth and the leaves of the pineapple plants make the green.

### *Planting Pineapples*

It is fun to watch men at work planting pineapples. First they do just what you do when you are going to plant a vegetable garden. You take your spade and dig up the ground. Then you take your rake and smooth it all off and make it soft and fine. The planters in Hawaii do just that, but they use bigger tools. They use a plow instead of a spade, and they use a harrow instead of a rake.

After the planters have made the ground all soft and smooth, they do something that surprises us. They hitch their mules to a queer-

looking sled. On this sled is a large roll of paper. As the sled is pulled along, the paper unrolls on the ground. Soon the field is covered with strips of paper.

It is a special kind of paper that lets the rain through. But it keeps the weeds from growing, and it keeps the sun from drying the ground too much. To keep this paper from blowing away, the workers cover the edges with a little earth.

Some of the fields are very large and it takes a great deal of paper to cover them. In the biggest plantations the strips of paper, all together, would be long enough to reach from Maine to California and back again to the edge of Colorado. In all, the paper would be four thousand miles long. You can see that it takes a great deal of time to cover these large fields with paper.

When a field is ready, the men who set out the plants come to do their work. We wonder how they are going to plant a field that is covered with paper, but soon we see. In the paper they cut round holes about three feet apart. These holes are just big enough for the young plants.

Now we wonder what they are going to plant. Will it be seeds? Will it be anything like the suckers or the potato-like things we saw men plant on the banana plantations?

We soon find out. We see that pineapples, like bananas, do not grow from seeds. The planters use crowns, or slips, or suckers.



A crown is a little bunch of leaves cut from the top of an old pineapple plant. A slip is a partly grown bunch of leaves taken from the side of a stem. A sucker is the branch or shoot that grows out from near the roots. How strange it is to be able to raise new plants from three different parts of an old one!

The planters do not have to worry about watering their newly planted pineapples. There is enough rain in Hawaii to give the little plants all the water they need.

The planters do have to spray them, however, with a liquid that has iron in it. If the plants

were not sprayed in this way, they would soon turn yellow and die.

The young man from America at first used to paint each leaf separately with a brush, but of course, when his plantations grew in size, he had to find a quicker way. So he invented a spraying machine.



When a pineapple plant is a year old, or a little more, beautiful purple flowers grow out of it. At first there are many separate flowers, but in a few months they grow together into the shape of a head, or the fruit we see in the stores. The fruit swells out, and sharp green spiky leaves grow all around it.

Finally, two years after the plant was first set out, the fruit is ready to pick. A plant bears

fruit every year for eight or ten years. Then a new plant has to be grown to take its place.

The plants grow from two to four feet tall. The largest ones sometimes bear fruit that weighs fifteen or twenty pounds. Only one pineapple at a time grows on a plant.

### *Harvesting and Canning Pineapples*

When they pick pineapples, the men just take hold of the top of the plant and bend it over and cut through the stalk with a strong curved knife. They have to wear thick canvas gloves and leggings to keep from cutting their hands or their clothes on the sharp leaves.

Perhaps you eat canned pineapples oftener than you do fresh ones. In Hawaii there are big factories where the canning is done. Let us visit one of these big canneries, as the factories are called.

The walls, the floors, and the machines are all very neat and clean. The rooms are airy and sunny. All the girls who fill the cans wear white caps and aprons, and rubber gloves. None of them ever touches the fruit with bare hands.

The machines work very fast. Only a minute and a half after a pineapple is put into the machines, it is peeled, sliced, and packed in a can.



Just watch one of these machines! It prepares one hundred pineapples a minute! One of its knives cuts off the tough shell. At the same time, another knife slices off the top, a third knife slices off the bottom, a fourth cuts out the core, and a fifth scoops out any fruit that clings to the shell. Eight more knives slice the fruit into thin slices.

There are other machines that seal the cans. Some cans are packed full of big slices, and others are packed with small pieces of different shapes.

Pineapple juice, as well as the fruit, is canned in these busy canneries. Even the shells and the cores are used. They are crushed and made into food for cattle.

### *Pineapples in Long-Ago Days*

A hundred years ago, the only pineapples in Hawaii were wild ones. They were small and not so sweet as the pineapples that are now grown on the plantations. There is a story that the first ones in the world grew in Central America.

A Spanish ship sailing from there across the Pacific Ocean was wrecked on one of the islands of Hawaii. A few of the pineapples from this ship floated ashore. They took root in the rich red soil of the islands, and soon plants were growing

everywhere. Since then, men have studied ways of making the fruit grow bigger and better, and now pineapples are one of the world's nicest fruits.

In *Stories of Hawaii*, by Ann S. French, there are many stories that you would like to read. One is "Joe's Pineapples."



## Dinner Under a Grapevine

MARY and John and their father and mother were traveling in Europe. They had always wanted to visit Italy, and at last their wish was coming true.

One day, while they were in the city of Naples, they went on a little steamboat to an island named Capri, which is not far from Naples. They had heard a great deal about this beautiful place. You can find it on the map of Italy, on the western coast, quite far south toward the toe of the boot. Italy, as the map shows, is shaped much like a boot.

### *A Trip to Capri*

While they were on the steamboat, Mary and John found many new and interesting things to watch. They never tired of looking at Mount Vesuvius. It was the first volcano they had ever seen, and they almost hoped it would shoot out fire as it did in some of the picture postcards they sent home. But that day Mount Vesuvius only kept sending puffs of smoke into the air, and did not do anything worse.

The children liked to look at the fishing boats, with queer-shaped sails, colored red, yellow, or brown. They thought the blue, blue water of the Mediterranean Sea must be the most beautiful water in the world.

Perhaps the most fun of all was watching the Italian men and boys rowing small boats. They stood up in them and faced the bow. To Mary and John this seemed to be rowing backward, because when they rowed, they sat down and faced the stern. But they said that sometime they would try to row the Italian way.

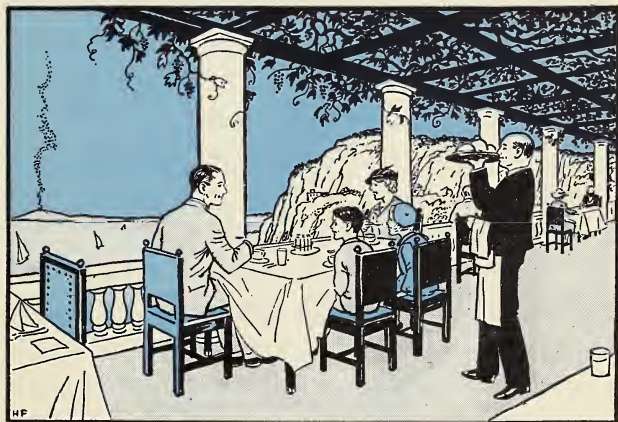
Before they knew it, Mary and John reached Capri. At first the island seemed to be mostly tall rocky cliffs with straight sides that came down close to the edge of the water.

In one of the cliffs is a famous cave, into which travelers go in rowboats. It is called the Blue Grotto because on sunny days the roof and the walls reflect the color of the water and seem to be blue themselves. Some people think that the whole inside of this cave looks like blue fire.

Mary and John, however, saw that Capri is not all steep rocky cliffs. They saw orchards of oranges, lemons, and figs. They saw flower gardens beside many of the pretty little houses. Almost every family seemed to be fond of flowers.

They were fond of birds, too, and there were bird cages in many of the windows.

The children noticed all these things while they were riding up a long winding road. They were on their way to a famous hotel, high up on one of the cliffs.



When they reached the hotel, they were delighted to see that dinner was being served on a porch covered with grapevines. Great clusters of grapes were hanging down over the tables.

Mary and John and their father and mother thought it would be great fun to eat under the grapevines.

What a good dinner they had! The food they enjoyed most was a big dish of Italian spaghetti

with meat sauce. It tasted much better than any they had ever tasted at home. And then for dessert there were big juicy peaches, ripe apricots, and best of all a big bunch of grapes.

*Grapes Grow in Our Country, too*

Have you ever eaten dinner under a grapevine? Katharine has, and she has never been in Italy, either. She lives in New York and has a grapevine in her garden. It grows over a playhouse. The thick leaves of the vine make the roof of her playhouse.

Often in the summer Katharine's mother lets her have dinner in her playhouse with her friends. And sometimes there are grapes hanging on the vines just as there were in Capri, where Mary and John had their dinner. But the grapes on Katharine's vine are not so large as those that grew on the vines in sunny Italy.

Grapes grow in many countries. France, Spain, Italy, Germany, and the United States are important grape-growing countries.

It is interesting to know that several years ago many of the vines in France died. The growers got new roots from America. These lived, and now many French grapes grow from American vines.



## *Grapes in Other Lands*

Fine grapes have always been grown in the countries at the eastern end of the Mediterranean Sea. The villagers make mud walls around their vineyards. They put thorny bushes on the top to keep people and animals from climbing over and stealing the fruit. If the bushes are not thorny enough, dogs, foxes, and even bears and wolves push through and feast upon the grapes.

In those lands the people eat grapes at almost every meal. They are so cheap that when a woman goes to market, she often exchanges three pounds of grapes for one pound of wheat. In our country it is the other way around. A pound of grapes usually costs more than three pounds of wheat.

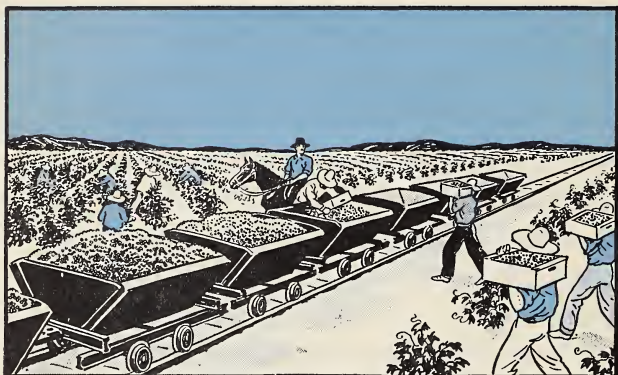
Grapes are among the first fruits that men learned to grow. They grow all over the world where the climate is mild enough. When the first English people came to America, they found grapes growing wild. The Indians were fond of them.

## *Grape-Growing in California*

In our country, the people who make a business of growing grapes usually have each vine grow-

ing by itself, without a stake or anything else to hold it up.

Every year they cut the vines close to the trunk and let the new branches trail along the ground. In a few years the trunk grows thicker, and by and by it is eight or nine inches through. It grows to be two or three feet high, and then it does not grow any taller.



Now let us visit a California vineyard. There the grapes are as large and fine as in Italy.

First we go to the roof of one of the buildings in which the grapes are packed. We look off for miles and miles and see green vines everywhere. They are in straight rows. We also see ditches full of water running between the rows.

If the vineyard is a very large one, we see

narrow railroad tracks. The crops are so large that they are moved to the packing houses by trainloads. The cars are hauled by gasoline engines.

When the bunches of grapes are sent away from the vineyards, some kinds are packed in big boxes filled with sawdust, or with fine bits of cork. This is to keep the fruit from being bruised while it is traveling.

Probably you have seen grapes packed in this way in the fruit stores. When they are brought home from the store, they should be washed to get off the cork or the sawdust. Sometimes grapes are packed in small baskets that hold only a few pounds.

You can learn to tell the different kinds of grapes by their color. Concord grapes are dark blue. Catawbas are large purple grapes, and Delawares are small purple ones. Niagara grapes are either yellow or light green. Which of these grapes do you like best?

## Fruits Dried in the Sun

FOR breakfast in the winter, do you sometimes have prunes or figs instead of an orange or half a grapefruit? Do you ever take raisins or dates to school as part of your noon lunch?

Have you ever wondered what makes these fruits look so different from others? Have you wondered how they look when they are growing? This chapter will tell you.

### *Billy Learns About Prunes*

Billy was eating some prunes one morning and he wondered about them. "Mother," he asked, "what are prunes? How do they grow?"

"Prunes are a special kind of plum, Billy," answered his mother. "They have been dried either in the sun or in hot rooms indoors. Maybe some day we can go and see how they grow and how they are prepared. You know Uncle Frank has a prune orchard here in Oregon."

Not long after that Mother said: "You know, Billy, you asked about prunes a little while ago. Tomorrow, Father is going to take us to Uncle

Frank's to see how prunes grow and how they are dried."

Early the next morning Billy and his father and mother started out. After quite a long drive, they reached the orchard.

"So you have come to see my prunes, have you, Billy?" said Uncle Frank. "I am glad to see you."

Then they went into the orchard. Many ripe prunes were hanging on the trees. They were dark blue, and grew close together on the branches.

"They look different from any plums I have ever seen," said Billy. "I have seen red plums, and yellow plums, and green plums. I have seen some blue plums, too. But I have never seen any shaped just like these."

"Let me get you a guide," said Uncle Frank. "He will tell us all about prunes."

In a minute or two Uncle Frank came back with a guide. This man could answer all of Billy's questions.

The family group started walking through the orchard. First the guide told Billy that prunes are not picked from the trees, the way so many other fruits are. They are allowed to stay on the trees until they are ripe enough to drop to the ground when the trees are shaken. They are

not hurt by their fall because the soil under the trees has been made soft.

Men with wire baskets were going through the orchard picking the fruit from the ground. They were carrying the prunes to a large building. Uncle Frank and the guide took Billy and his father and mother into this building. There the workers were washing the prunes very carefully. Then they dipped them for just a minute into a liquid that cracked the skins of the prunes.



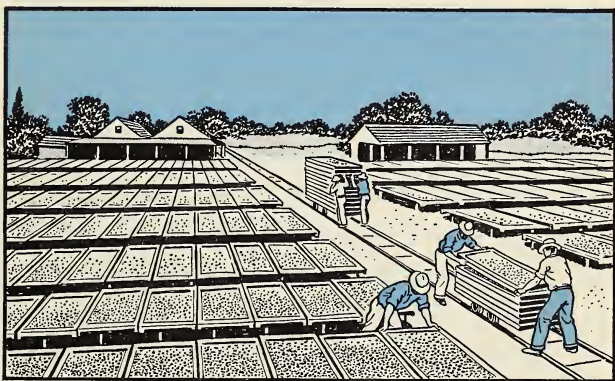
Next, the workers placed the fruit in large trays which they set out in the bright sunshine. The guide told Billy that the prunes would be left in the sunshine for five days.

“What do they do if it rains?” asked Billy.

“Then the fruit is dried indoors,” answered the



guide. "It is placed in heaters or in large ovens and dried there. The prunes that are dried out in the sunshine have to be turned several times a day so that they will dry all through. As they dry, the prunes get smaller and smaller. When they are dry, they are about half the size they were when they dropped from the trees."



In another part of the building the men were putting the dry prunes into a liquid again. This liquid was so hot that it steamed the prunes. The guide told Billy that it made the prunes keep a long time without spoiling.

Billy watched the workers taking the prunes out of the hot liquid and placing them on wire screens so that most of the liquid would drain off. Then they were packed in boxes while they were

still damp and warm. Billy was delighted when Uncle Frank gave him a small box of prunes to take home.

“This has been an interesting visit,” said Billy as he thanked Uncle Frank for the prunes. He also thanked the guide for all he had told him.

On the way home, Father told Billy that prunes are prepared for the market in just the same way in California, Washington, and Idaho.

### *Billy Learns About Raisins*

Father and Mother told Billy about other fruits that are dried in the sun. First they told him about raisins. Raisins are grapes of a special kind. Most of our raisin grapes grow in California. They are prepared in much the same way that prunes are.

The grapes that are used for raisins are usually light green or light purple. They make good raisins because they are very full of sugar, and because they dry more easily than dark blue grapes do.

They usually grow without any seeds. If there are seeds, they are pressed out by machines. The machines have two rollers close together, made of springy rubber. Fine teeth on the rollers prick into the grapes and comb out the seeds. Another machine cuts off the stems.

Sometimes raisins are sold in clusters, with both the stems and the seeds left in them. They make a pretty table decoration at Thanksgiving.

Raisins have been known for more than 2500 years. The people of Egypt were probably the first to use them.

### *Billy Learns About Figs*

Then Father told Billy about figs. Here are some of the things he told him.

The first figs grew in Arabia. As time went on, men who traveled eastward into Persia, India, and China, planted figs in those countries. Explorers from Europe found figs in Mexico a hundred years after Columbus discovered America.

Figs grow well in California and in Texas. Some grow in the States along the Gulf of Mexico and in other States in the southern part of our country. And they grow in faraway lands in Europe and Asia.

While they are growing, figs look like small tomatoes. Ripe ones are pear-shaped. They are of different colors. They may be dark blue, purple, red, green, yellow, or white. They are pink inside. They are juicy and as sweet as sugar. Fresh ripe figs taste different from the dried figs we usually have.

There is one strange thing about fig trees. They never have blossoms on their branches. The flowers are inside the fruit. This is why figs are so full of seeds.



Figs are allowed to stay on the trees until they are so ripe that they fall off. At harvest time, we should see the orchards full of men, women, and children gathering figs for the market. They do not pick them from the trees as oranges or apples are picked. They pick them up from the ground just as prunes are gathered.

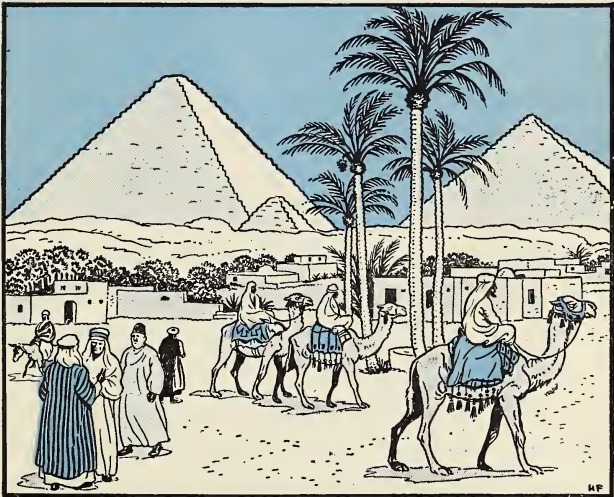
Figs spoil quickly after they have dropped from the trees, so the pickers work fast to fill their big baskets. They carry the figs to the drying grounds and lay them upon boards in the sun to dry. Later the figs are pressed firmly together, and are packed in layers in boxes. Dried figs

keep a long time, but fresh ones cannot be sent far from where they grow.

Both fresh figs and dried figs are much used as food by the people of the lands where they grow. Sometimes dried ones are made into flour and baked into cakes.

Some of the countries at the eastern end of the Mediterranean Sea are famous for their figs. There are many large orchards. Anyone passing by is allowed to help himself to some of the figs. The trees bear two and sometimes three crops every year, so the owners have plenty to spare.

“I wish I could go there,” said Billy. “I should like to taste fresh figs.”



## *Billy Learns About Dates*

Then Mother told Billy about dates. She told him that some dates grow in our country, but that more dates grow in Arabia than anywhere else in the world.

“That is a surprise,” said Billy, “because I thought Arabia was mostly a desert.”

“It is,” answered Mother, “but there are places on the desert where trees called date palms grow.”

When people traveling across the hot desert see date palms, they know that they will find water there, too. They can go to that place and find a spring or a well. Often there are villages or good-sized towns under the palm trees.

There may be grass enough around the palm trees to feed sheep and goats, or a few cattle. There may be other trees growing in the shade of the palms.

Fig trees and almond trees grow in this way. There may even be vegetable gardens in these green spots on the desert. A green spot like this in the desert is called an oasis.

Date palms are tall straight trees, sometimes a hundred feet high. At the top they branch out into feathery leaves that are often very long. The



ends of the leaves bend down toward the ground. The dates grow in big bunches at the top of the tree, close under the leaves.

The blossoms of the date palms are pure white. When they fall, they leave little white dates hanging in bunches on the long stems.

Soon the little dates turn green. They grow larger, and, when summer comes, they turn to a reddish-yellow. A big bunch may have two hundred dates. And a tree may have from six to twenty bunches on it.

You would laugh to see the boys and men climbing the trees to pick the dates. They sit in the loop of a rope which they have tied around the tree. Little by little they jerk the rope upwards, and at the same time push against the tree with their feet. Sometimes they tie a short rope around their feet, to keep them close together. The bark is rough, so neither the rope nor the climbers' feet slip.

The trunk is just about the same thickness all the way up, so the rope can be jerked along quite easily. How would you like to climb a date palm?

The dates ripen a few at a time, so the men and boys have to climb many times to get all the dates. They cut them off with knives and carry

them down carefully so the fruit will not be hurt.

This is one way the dates are taken to the ground. A man or a boy with a big knife in his hand climbs almost to the top of the tree. Another climbs close enough to him to reach the dates that the first one hands down. A third goes high enough to reach the second. They pass the fruit down from one person to the next below him.

Women and girls sitting under the tree sort the dates by sizes. They pack them in boxes or in bags of matting, which are loaded upon the backs of camels and taken to the nearest railroad. This may be quite a long journey, or it may be only a few miles.

The people who live in an oasis use dates for food in many ways. They eat some fresh from the trees. They dry some, and they cook some. From some of the dried fruit, they make a sort of flour which they bake into bread.

These people press the oil out of some of the dates, and use it as we use butter. From the juice they make a syrup as sweet as honey. They pound up the seeds of dates and make a drink not very different from coffee.

There is a bud at the top of the date palm

which the Arabs use as a vegetable. It is like a cabbage.

Food for their animals comes from dates, too, for their goats and camels are often fed on paste made from the ground-up seeds.

When these people make long journeys across the desert, they feed their camels on dried dates. Four handfuls twice a day are enough food even for a camel. Dogs, too, eat dried dates.



Many people think that date palms were the very first trees that man learned to grow. Sometimes they are called just palm trees. They were known in Egypt thousands of years ago.

Since that time, date palms have become more and more valuable to the people of desert lands.

They have spread to those parts of the world where the climate is hot enough for them to grow. Today they grow in the southern parts of China, Spain, France, and Italy.

They grow in some parts of California and Arizona. In our country, the date palms do not grow as tall as they do in the hot, dry deserts of Arabia and Africa.

The date palms, as the Arabs say, must have their feet in the water. No sun seems to be too hot for their heads.

In some places in Arabia we should see date palms growing in deep holes in the ground. This is to allow the tree to send down long roots and suck up water from far below the surface.

“Those were good stories,” said Billy. “I have learned a great deal today about fruits that are dried in the sun.”

# Vegetables at Home and In Other Lands

**A**S YOU know, in summer vegetables grow everywhere in our country. They grow in the North, in the South, in the East, and in the West.

Our next stories tell why it is possible for us to have fresh vegetables in the winter time, even if it is too cold for them to grow near our homes.

Some of the stories tell about markets, about boys' and girls' gardens, and about learning to cook. Some tell about canning vegetables in factories.

Other stories tell about our everyday vegetables in olden times and in other parts of the world, and about others that grow in only a few lands.

To us, a few of these vegetables would seem strange foods; but the people who eat them like them just as well as we like ours.



# Our Vegetables and Where They Grow

AT DINNER one winter day, John said to his father, "Daddy, how good these vegetables are! Where do they grow? It is too cold now for them to grow here in Massachusetts. I should like to know just where they grow in the winter. I know that in the summer, they grow right near our home."

"Well, John," answered Daddy, "that is a very good question. I wonder how many other boys, or girls either, have thought of asking it." Then Father told John this story.

## *Fresh Vegetables in Winter*

In winter, in all the northern part of our country, the ground is frozen and the weather is cold. Often the ground is covered with snow. The farmers cannot raise vegetables. All the fresh vegetables the people buy in the markets have been raised where the weather is warmer.

The fresh vegetables the people in the North buy in the winter have traveled long distances.



Some of them come from the southern part of California, the big State that fills almost the whole length of our Pacific Coast. Some come from Texas, in the Southwest, the largest of all our States. Some come from Florida, in the very southeast corner of our country. In these States and in other Southern States farmers raise vegetables every month in the year. They can do this because, most of the time, the weather is warm and sunny. Let us see which vegetables they send North in the winter.

From December to April, the fresh beans and beets that we buy in the markets grow either in Florida or in Texas. As you can see by looking at the map, these two States are on the shores of the Gulf of Mexico.

Our cabbage, too, comes from Florida or Texas, or else from Mississippi, which is about halfway between these two States.

The carrots and peas that we have in winter are grown either in California or in Texas. The tomatoes are grown in Florida, and the spinach in Texas.

When we buy cauliflower in winter, it probably grew in Florida or else in the southern part of California. California and Florida also send us lettuce and celery. New Mexico and Arizona,

which are just west of Texas, send us lettuce, too. Our eggplant comes from Florida, Alabama, Mississippi, Louisiana, or Texas.

Sometimes, in the middle of the winter, as a great treat, your mother gives you strawberries for dessert. The strawberries she buys about Christmas time probably were raised in Louisiana. Later, strawberries come from Arkansas and Missouri. Later still, big crops are raised in Virginia and Maryland and in the Northern States.

Toward the end of April, the weather becomes quite warm in States that are farther north. Many of our fresh vegetables then come from South Carolina, North Carolina, and Virginia. Can you find these States on the map? They are on our Atlantic Coast a little north of Florida.

The warmer it gets, the farther north our vegetables grow. So, when summer comes, we see big fields of vegetables in almost every part of our country.

### *All Our Vegetables Grow in Our Own Country*

It is interesting to think that every single kind of vegetable we eat grows somewhere in the United States at some season of the year. We do not have to make long journeys across the ocean to see any of them growing. You remember

that we have to travel to faraway lands to see how some of the fruits we eat are raised.

It is interesting, also, to know that several of our States are famous for their huge crops of some one kind of vegetable. This is because of the kind of soil and the climate that they have. Some kinds of vegetables grow best in the very rich soil that is found in some parts of our country. Others grow better in sandy soil, such as is found in other States. Hot weather, cold weather, strong winds, gentle winds, much rain or little rain are other things that affect the way vegetables grow. Think, and see if you understand why.

### *Some Famous Crops*

California, you would surely guess, raises many different kinds of vegetables and leads the whole country in the size of several crops. California asparagus is famous everywhere. The rest of the States raise, all together, only a third as much asparagus as California does.

*Boys' and Girls' California*, by Ethel I. Salisbury, tells about the great vegetable farms and many other interesting things about this beautiful State.

If you were to guess again, you would probably

say that Florida is another State where different kinds of vegetables grow very well indeed. You would be right. Almost everyone might be puzzled, however, to name the vegetable in which Florida leads the country. It is eggplant. It seems rather strange to find that the next largest crop of eggplant is raised in New Jersey, which is hundreds of miles north of Florida. The only other States that raise large crops of this vegetable are along the coast of the Gulf of Mexico.

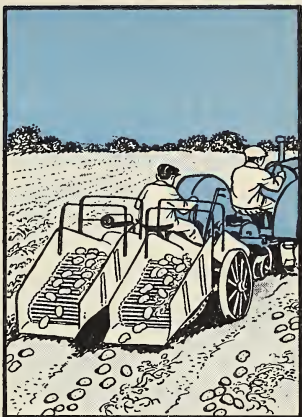
If you had a third chance to guess a leading vegetable-growing State, which would you name? Texas? You would be right once more. One crop in which Texas leads the whole country is onions, and another is spinach.

North Carolina is another important State for vegetables. What do you suppose is one of its chief crops? Peanuts! Does it surprise you to learn that peanuts are vegetables? They grow underground on the roots of a vine, and are not nuts at all.

The next pictures show, on the left, stripping peanuts from the vines; and on the right, digging potatoes.

The most important crop in North Carolina is sweet potatoes, which grow underground, too. They are the real roots of a plant. Georgia,

which is just north of Florida, raises even more sweet potatoes than North Carolina does.



To learn where the biggest crops of white, or common, potatoes grow, we follow the seacoast north from Florida. We follow it as far as we can without going into Canada. Finally we come to Maine, in the northeast corner of the United States. Maine potato crops are the largest of all.

Now let us go westward along the boundary line between the United States and Canada. We come to the five Great Lakes. One of them is Lake Michigan. South of this lake is Indiana.

Indiana leads the country in raising pumpkins and squashes. All the other States together do

not raise many more than Indiana does. Think of the millions of Thanksgiving pies, and the millions of jack-o'-lanterns that could be made from Indiana pumpkins and squashes!

Perhaps you have seen a cornfield in the fall with hundreds of big dark yellow pumpkins and green squashes lying on the ground in rows. Others are in huge piles, waiting to be loaded into wagons and trucks. Farmers in Indiana and everywhere else often plant pumpkin or squash seeds in the same rows with their corn. The pumpkins and the squashes are ready for the market after the corn has been harvested.

A very good book that will tell you more about the farms and the fruits and vegetables raised in all our States has been written by Lucy Sprague Mitchell. Its title is *North America, the Land They Live in for the Children Who Live There*.

### *Sending Vegetables to Market*

Have you ever wondered how the farmers send their fresh vegetables to the markets? If they are near a city, they send them in automobile trucks. They usually pack the vegetables in baskets, or boxes, or bags, or barrels.

Sometimes the trucks are loaded in the afternoon or evening. They leave the farm before it



is light the next morning, and get to the city about the time the milkmen are delivering their bottles of milk. Then the vegetables are taken from the trucks, and the marketmen take them into their stores. By the time business men are getting to their offices, the fresh vegetables are all ready for the people to buy.

The market district in a city is a busy place while the supplies are arriving. The markets are long buildings with little shops along each side of a wide hall. There are also little shops outside, along the sidewalk. Men and boys are carrying huge pieces of meat on their shoulders. Others are bringing in fruits and vegetables. They wheel the boxes, crates, and baskets on little carriers like the ones on which baggagemen in railroad stations wheel trunks. Everyone rushes back and forth from the trucks lined up in the street. In a surprisingly short time everything is nicely arranged in the shops, and the shop-keepers are ready to sell.

If a farm is far away from a city, the vegetables have to travel on trains. On long journeys they are carried on refrigerator cars. These cars have spaces which are always packed full of ice. This keeps the vegetables so cool that they do not spoil on their way to the city.

The next picture shows a refrigerator car, and the one after that shows a delivery truck.



### *Cold-Storage Warehouses*

Many cities have big buildings which are called cold-storage warehouses. They are used for keeping extra supplies of vegetables and other foods until the markets need them. These warehouses have huge rooms built like refrigerators. The cold temperature keeps the foods from spoiling.



## Markets and Vegetables

NANCY enjoys going to market with her mother. She likes to look in the windows and the showcases where so many vegetables of different colors and shapes and sizes are arranged.



She almost always sees boxes of green peas, yellow or green beans, dark red beets, bright red tomatoes, ears of yellow or white corn, and green spinach. She also sees purple eggplants that

look like balloons, and bunches of little red or white radishes, and orange-colored carrots. Perhaps you enjoy marketing as much as Nancy does. Which vegetables do you think are the prettiest?

### *Markets Sell Fresh Vegetables*

Nancy likes to help her mother choose the vegetables that they are going to have for dinner. She is always interested to see how the different kinds of vegetables look before they are cooked or made into a salad.

Before she had gone to market many times, Nancy knew how a squash or a cauliflower or a stalk of rhubarb looked when it came from a farm. She could also tell a head of lettuce from a cabbage, and how asparagus is different from celery. It was quite a long time before she was sure that she knew what an artichoke was.

Nancy discovered, too, that there were other vegetables whose names she did not know. So she asked questions. One day she made a list of fifteen different vegetables that she saw in the market. Another day she was able to make a list of thirty-six different kinds. How long a list can you make?

*To Market We Go*, by Jane Miller, tells about

some children who grow vegetables and take them to market. You will enjoy reading it.

### *Markets Sell Canned Vegetables*

When Nancy's grandmother was a little girl, there were very few canned vegetables. But now we can buy in cans almost all the kinds of vegetables that the farmers raise. Whenever we cannot get fresh vegetables at a market, we can get canned ones that taste very nearly as good.

Farmers often send a large part of their crops to factories where vegetables are packed into cans and jars. Most of the work of preparing vegetables for canning is done by machinery. There are some machines that strip the pods from peas, and others that cut asparagus and string beans into pieces of the right size.

There are machines that mash vegetables, such as sweet potatoes or pumpkins. There are other machines that seal the tops on the cans, and that paste on the labels.

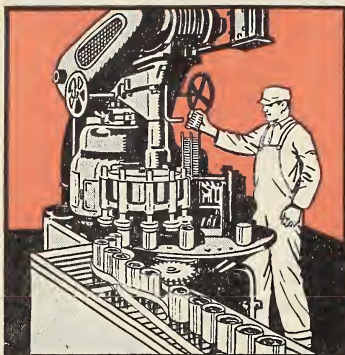
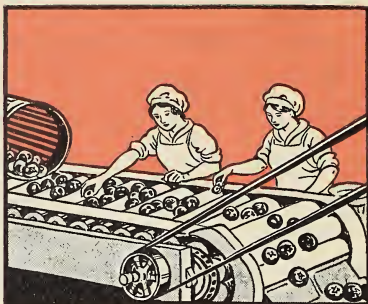
The vegetables are all washed very carefully before they are put into the cans. The cooking is done after the cans have been packed. Canned vegetables will stay good no matter how long it may be before the cans are opened. The next pictures show you how vegetables are canned.



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*These girls are making sure that all the tomatoes that go into the cans are perfect ones.*

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*This machine packs the tomatoes into the cans. Another machine seals them tight. The cooking is done afterwards.*

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*This great metal basket is filled with cans of tomatoes. It will be lowered into a huge cooking chamber.*

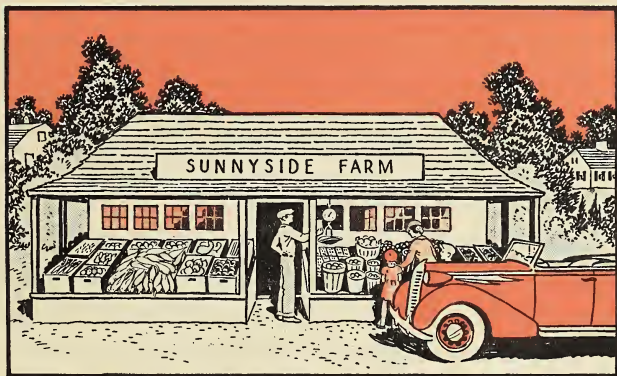
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Most markets sell many vegetables and fruits in cans and jars. The labels are printed in bright colors, and have pictures of what is inside the cans. The labels also tell the name of the factory where the canning was done.

Nancy likes to notice where these factories are located. She is making a collection of the names of the cities and States where there are canneries. It interests her to discover that a great many of the canned vegetables and fruits come from places in California, the State of Washington, from Oregon, New York, Maryland, and Indiana. But she finds that canneries are scattered through almost all of the forty-eight States that make up our country. Some of them pack meat, fish, soups, and spaghetti in cans, as well as fruits and vegetables.



## *Open-Air Markets*

If you live in the country instead of in a city or a town, perhaps the market is out in the open air instead of in a store. It probably has an awning over the counters to give shade from the sun.

The vegetables come from farms in the neighborhood, and are as fresh as fresh can be. They look very inviting.

In the country, too, many men who have small farms have little roadside stands. There they sell some of the vegetables and fruits they raise. People who are out for a ride often stop at these stands to buy some of the attractive things spread out on the tables. Sometimes the farmer lets his children do the selling, and gives them some of the money they take in. Have you and your family ever bought vegetables at a roadside stand? Have you ever sold any?

## *Vegetables on Our Dining Tables*

When Nancy began to think about vegetables, she thought that we always cook them before we eat them. Then she noticed that in salads there are raw vegetables, such as lettuce, tomatoes, celery, and radishes. She discovered another

kind of vegetable that she could eat straight from the garden, too. One day she pulled up a carrot, washed it, and ate it raw. She thought that it tasted very good.

Then she found out that there are different ways of cooking vegetables. She often went into the kitchen when her mother was preparing dinner. She asked questions, and learned how to boil vegetables, how to stew them, and how to bake them. While she was cooking, her mother let Nancy watch. By and by she let her try cooking vegetables in different ways. After a while, Nancy could do it very well. She enjoyed learning one thing after another, and was very proud to be able to help her mother.

When your mother teaches you to cook, you and she will both be interested to read *Jane Louise's Cook Book*, by Louise P. Bell.

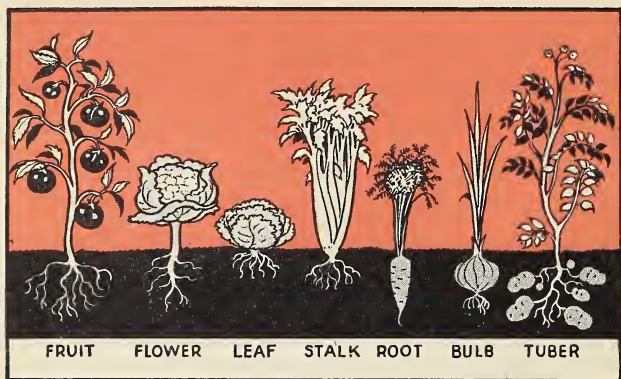
### *Different Vegetables are Different Parts of Plants*

One of the most interesting things that Nancy learned about vegetables was that some are the fruits of plants, some are the leaves, some are the flowers, some are the seeds, some are the stems, and some are the roots.

When you eat tomatoes, eggplant, pumpkin,

squash, or cucumber, you eat the fruit of a plant.

When you eat cabbage, lettuce, chard, or spinach, you eat leaves. Parsley is a leaf, too. It is often used with other vegetables, with meats, and in soups and salads to make them look pretty and to make them taste better.



Do you eat any other leaves as vegetables? Some people like beet greens and dandelion greens. These greens are the young leaves of the plants. Brussels sprouts and artichokes are leaves, too.

Other vegetables are the flowers of plants. Cauliflower and broccoli are two of them.

Peas, beans, sweet corn, and popcorn are the seeds of plants. You have eaten sweet corn from the cob, haven't you? And you have eaten it when it comes from a can. You know how the

kernels, or seeds, look when they are on the ear. You know how they look when they are off the ear, too.

There is a special kind of corn that is used for popcorn. The kernels are more pointed than the kernels of sweet corn.

You have seen peas in the pod, haven't you? Most country children have seen peas growing. They know that there are little white flowers that come first. They know about the tiny pod that is left when a flower drops off. And they know how good the peas taste when the tiny pods have grown big and fat.

Many city children have seen peas in the pod, too. Mothers often buy peas in the pods at the store, and children help to shell them. The peas that come in cans have been shelled by machinery.

Beans are seeds that come in a pod, too. There are different kinds of beans. Some are used when they are fresh, and some are dried. Some are eaten in the pod, and some are shelled in just about the same way that peas are shelled.

When you eat fresh beans, you usually eat both the green or yellow pods and the seeds themselves. But when you eat baked beans or shell beans, you eat only the seeds that have been taken from the pods.

The stems and leafstalks of some plants are used as vegetables. Celery is a bunch of leafstalks, each with its leaves on the end.

Rhubarb and asparagus are the stems of plants, too. Rhubarb, like celery, is a leafstalk. Have you seen the huge green leaves that grow at the end of the red stalks? Asparagus is different. Each stalk of asparagus is a young, growing stem, with buds along its sides. If the stalk stays in the garden, instead of being cut, it grows into a tall plant with branches and fine feathery leaves.

When you go into a vegetable garden, you can see the leaves, the flowers, the seeds, and the stems of the different plants. Is there any part of a plant that you cannot see? Of course, if you pull a plant out of the ground you see its root, but that is the only way to see it. Did you know that we eat roots of some plants? Perhaps you like carrots. They are the roots of plants. Beets, parsnips, sweet potatoes, turnips, and radishes are the roots of other plants.

White potatoes are not real roots. They grow on the roots of a plant, but their real name is tuber.

Some vegetables, such as onions, grow as bulbs underground. There are little roots reaching out from the bulb. We eat the bulb, but we do not eat the roots themselves.



*Some Vegetables Your Great-Grandmother  
Never Saw*

Nancy's grandmother told her some other interesting things about vegetables. "When I was a little girl, Nancy," she said, "my mother used to tell me there were some kinds of vegetables that the farmers did not grow a hundred years ago. In those days, people never had tomatoes on their table, and they never had sweet potatoes. Those vegetables grew in other parts of the world, but not in our country.

"A hundred years ago, people didn't have Brussels sprouts, or broccoli, or Swiss chard. Artichokes, eggplant, and rhubarb are three other vegetables that they never even saw.

"And if you had seen their peas, beans, corn, potatoes, and other vegetables, you would have been surprised to see how small they were. You probably would have thought they were not worth eating.

"I think it is very wonderful that our farmers have learned how to raise so many new kinds of vegetables. It is wonderful that they can raise vegetables so much bigger and better than the old-fashioned ones used to be. I wonder what our farmers will learn to do next!"

## Jack-o'-Lanterns

**H**ALLOWEEN was coming and Tom and his friends wanted to make jack-o'-lanterns. Tom lived on a farm, so it was easy for them to get pumpkins. They went out to a cornfield. And there, among the cornstalks, the boys saw many pumpkins on vines that grew between the corn plants. Each boy found just the pumpkin he wanted. The pumpkins were large and round and yellow all over. Each one had a strong green stem.



Tom cut his pumpkin from the vine and lifted it into his wheelbarrow. He wheeled it back to the house. Then he went to work making his jack-o'-lantern.

After he had finished it, he set it on a fence post in the front yard. After dark, with a lighted candle showing through its eyes, nose, and mouth, the jack-o'-lantern looked like some fierce goblin.

Jane was planning a Halloween party. She was trying to think of something new to do at her party. She decided it would be fun to have a little pumpkin for each boy and each girl. She would give a prize to the one who could make the best jack-o'-lantern.

But Jane did not live on a farm. She could not go into a cornfield and search among the cornstalks for pumpkins that would be just the right size.

Jane lived in a city, so she had to buy her pumpkins. She went to the big store where her mother usually bought vegetables and groceries. She told the clerk about her plans for a party.

The clerk said he had some pumpkins. He took her past the long rows of shelves filled with canned fruits and vegetables to the place where he kept the fresh fruits and vegetables. Here Jane saw several pumpkins, but they were all

very large. There was not a single small pumpkin.

“You see, we keep the kind of pumpkins that make good pies,” said the grocer.

Jane was sorry that she could not find her pumpkins at this store. Then she thought of a small store not far away. It was a store where fresh fruits and vegetables, but no groceries, were sold.

She went to this little market and told the clerk what she wanted. He took her past big boxes of shiny red apples, bunches of ripe yellow bananas, barrels of brown potatoes, and barrels and boxes of other fruits and vegetables.

At last they came to a counter in the back of the store. Here were the pumpkins. There were big pumpkins and middle-sized pumpkins, but no little pumpkins. Jane was disappointed. She did not know where else to go. And she did want the little pumpkins for her party.

At dinner that evening, Jane was telling her father about her plan, and how she had been disappointed. He said: “Jane, I have an idea. Let us drive out to a roadside market. I feel sure we can find some small pumpkins there.”

Jane was delighted. So after dinner, Father, Mother, and Jane got into the car. They drove

out into the country. There the houses were smaller and not so close together as they were in the city.

Soon they came to a place where one busy road crossed another busy road. Here Jane saw another kind of market. The front was open and Jane could see all kinds of fruits and vegetables. They were outside in front of the store, inside the store, and all around the sides of the store. It looked as if the owner of this market had so many fruits and vegetables that he could not keep them all inside.

Jane could hardly wait for Father to park the car. But soon he found a good place. Jane hurried to the market, and Father and Mother followed her.

Jane ran past boxes and boxes of apples. She ran past boxes of pears, peaches, plums, and grapes. She ran past the potatoes, the carrots, the cabbages, and the tomatoes. She ran right to the place where she had spied rows and rows of pumpkins.

There were some of the largest pumpkins Jane had ever seen. There were middle-sized pumpkins. And Jane could hardly believe her eyes when she saw a row of little pumpkins.

“Oh, these are just what I want!” she said.

“Now, we can have fun at my party.” So she bought her pumpkins, and Father helped her to carry them to the car.

Then Jane and Father helped Mother to carry to the car some fresh fruits and vegetables she had bought while Jane was selecting her pumpkins.

The day of the party came. The children were there, right on time. They were ready for the Halloween surprise they knew Jane would have for them. And they were not disappointed when Jane brought out the little pumpkins and some knives. What a good time they had carving the jack-o'-lanterns!

When they had finished, the children put candles in their lanterns and lighted them. Then they showed their work to Father who was the judge. There were so many good jack-o'-lanterns that it was hard for him to decide which was the best. At last he gave the prize to a boy who had made a jack-o'-lantern with a very funny face. The prize was a box of candy jack-o'-lanterns.

Next, Father said to the children, “Come with me. I have a surprise for you too.” He took the children into a dark room. The only light was from the twinkling eyes of tiny laughing faces. “I never saw such little jack-o'-lanterns before,” said one of the girls.



“Aren’t they cunning?” said all the children.  
“What are they made of?”

Then Father turned on the lights, and the children saw that he had used oranges, apples, lemons, cucumbers, and squashes to make his jack-o’-lanterns.

When Jane saw all these little lanterns, she said: “I could have had my guests make jack-o’-lanterns like these if I had thought of it. I never thought of using anything but little pumpkins. How clever you are, Daddy!”



## Dorothy Learns to Cook

DOROTHY liked to watch Mother cook. One birthday, she was given a new toy stove. It was an electric stove. She was eager to cook something on it.

Dorothy's brother Dick had a suggestion for her. He said he had some good vegetables in his garden, and she could have some of them to cook.

Dick and Dorothy went out to the garden. How nice it looked! It was not a large garden, but Dick had taken good care of it. He had pulled out all the weeds. He had kept the soil soft around his vegetables, and he had watered them. Now they had grown large and ripe.

Dick told Dorothy she could have a different vegetable each day for a week. Dorothy thought quite a while. It was hard to decide. She liked vegetables of all kinds.

At last she chose carrots. Dick pulled four for her. The leaves were green and feathery. The carrots were big and a bright orange color. Dorothy could hardly keep from eating one raw,

but she remembered that she wanted to cook all four on her stove.

She hurried to the house and washed them. She cut from the top of each carrot a thin slice of the carrot with the leaves that were growing in it. The leaves were so pretty that she put them in water in a vase.

Then she poured some water into one of the little pots on her stove, put in a little salt, and turned on the electricity.

While the water was getting hot, Dorothy washed the carrots and cut them into small pieces so they would cook quickly. When the water began to boil, she dropped them into it. The carrots boiled until they were tender. Dorothy served them with butter at dinner.

Father, Mother, Dick, and Dorothy ate the carrots. How good they tasted! Father said, "Dick, I never ate finer carrots, and, Dorothy, they are very well cooked."

The next day Dick said, "Dorothy, how would you like to cook some fresh green peas on your stove today?"

"I'd like them better than anything else," answered Dorothy.

So Dick and Dorothy went out to the garden again. Dorothy helped Dick to pick the fat

green pods from the vines. Then Dick helped her to shell the peas. It was great fun to split the pods and make the round peas pop out.

Then Dorothy washed the peas and put them into a pot as she had done with the carrots. They were so fresh and tender that it took only about ten minutes to cook them.



Dorothy served them with butter at dinner, and oh, how good they tasted! Mother said, "Father, you and I will be able to take a rest soon. Dick will grow our vegetables and Dorothy will cook them."

Dorothy cooked beets, green beans, white turnips, and a tiny green cabbage, each on a different day. Then Dick said, "Dorothy, I have some potatoes that Father thinks are big enough to

bake. Do you suppose you could bake four in your oven?"

Dorothy looked at her oven. "Yes, I am sure I can," she said.

So she went out to Dick's garden with him. She watched him dig down into the ground for the brown potatoes. Soon he found four fine ones. There were some little ones, too. But Dorothy washed and baked only the four large ones. She baked them for an hour in her oven. When they were ready, they felt soft. She served them with butter.

As the family were eating them, Dick said, "Dorothy, it is a good thing Father gave you that stove."

"Yes, Dick," said Dorothy. "And it is a good thing you planted that garden."

## Don and Bob Plant Vegetables

IT WAS a warm, sunny day in the spring, and Don and Bob were planting vegetables. They had a garden of their own. The ground was ready. They had spaded it, and they had raked it. Now it was ready for planting the seeds.

The boys bought packages of seeds at the seed store. They bought beans, peas, lettuce, radishes, corn, carrots, and beets.

The boys had planned their garden carefully. Their father had told them that the rows of vegetables must not be too close together. He showed them where to make the rows.

First they drove pegs into the ground along one side of the garden. Then they put other pegs opposite them. Next, they tied strings across the garden from one peg to another. This was to help them plant their seeds in straight lines.

Then they put the seeds into the ground and covered them with a little earth. Last of all they watered all the rows.

The next day, Don and Bob planted onions. They did not use seeds. They planted tiny



onions. These are called onion sets. The boys planted them in straight rows, too. They were careful to leave spaces between all the rows. These spaces made paths wide enough for the boys to walk on whenever they worked in their garden.

After the onions were in the ground, the boys planted their tomatoes and cabbages. They did not use seeds for these, either. They set into the ground little plants which they had bought from the seed store.

They knew some boys who had grown their own cabbage and tomato plants from seeds. These boys had planted the seeds in boxes of earth in the house early in the spring. Don and Bob decided they might try that plan another year. But this year they were using plants because it was too late to plant seeds. The vegetables would not be ready to eat in the summer if the boys tried to raise them from seeds.

It was fun to set the little plants in the ground. While the boys were doing this, Father came along. "You boys will have to water those plants every day to keep them alive," he said.

Don and Bob promised to do this. They knew that the little plants would wilt in the hot sunshine if they were not watered well.

The boys still had enough space in their garden for potatoes. They took the seed potatoes their father had given them and cut each one into small pieces. They were careful to have an eye in each piece. Then they put them in the ground and covered them with earth.



Now their garden was all planted, and it looked very neat. The boys were proud of their work, and they thought of the good things they would have to eat when their seeds and plants had grown.

If you and your family have a little vegetable garden of your own, you will learn to tell the different plants quicker than boys and girls who have no gardens.

It will be fun to find out which vegetables come first in the spring, which come early in the sum-

mer, and which come later. You will be interested to learn that some, like asparagus and rhubarb, do not have to be planted every year. The plants live many years.

Here is a list of the vegetables that many families like to have in a home garden. They are all easy to grow.

These grow tall: beans, corn, peas, and tomatoes.

These are only a few inches high: beets, carrots, lettuce, onions, parsley, radishes, and spinach.

If your father can let you and your brothers and sisters use a piece of ground 30 feet long and 15 feet wide, you will have space for several rows of each of them. If your yard at home is too small, perhaps you and your friends can make a garden at school.

If your family can have a large garden, they can raise also asparagus, cabbage, potatoes, cucumbers, rhubarb, and squash. All of these need a lot of room.

Sometimes boys and girls who are neighbors form a club and have a garden together. Sometimes they raise such good vegetables and flowers that they send them to an exhibition and win prizes. They may earn money by selling some of their vegetables. Perhaps you or someone you know will grow up to be a famous gardener like

Luther Burbank, the man you will read about in the next story.

If you would like to have a vegetable garden of your own, you should read *When Mother Lets Us Garden*, by Frances Duncan. It tells how to plant and take care of vegetables.

*The Children Make a Garden*, by Dorothy H. Jenkins, is another book that will help you.

Sometimes boys and girls join "Four H Garden Clubs." The Government offers prizes for the best gardeners.

These clubs are named "Four H" because they aim to teach children to work with their hands, their head, and their heart, and to keep themselves healthy. They aim to make good citizens. If they make boys clever with their hands, teach them to think, and show them how to be kind, and how to take care of their health, they will surely make good citizens. The club has a badge like a four-leaved clover. There is a capital letter H on each leaf. Do you see what each H stands for?

## Luther Burbank and His Work

NOT very many years ago, a boy was born in Massachusetts who grew up to be the most famous grower of vegetables and fruits in California. His name was Luther Burbank.

When he was old enough to go to work, Luther took a job in a factory. He soon invented a machine that did the work better than the old one had done.

The manager of the factory was much pleased, but Luther did not want to keep on working in the factory. He did not want to spend his life among machines, because he had always liked to be out-of-doors with the trees, plants, and flowers he loved so much.

After a while he left the factory and went to work on a small piece of ground that belonged to his father. He raised vegetables and sold them to the market.

He studied his plants more than most farmers. Before long, he made up his mind that he would find out how to grow better vegetables than anyone else.

He tried to make potatoes better. He succeeded in growing the best potatoes ever seen. He did not tell anyone how he had done this. He kept it a secret. But one day he sold his secret for one hundred and fifty dollars.

After that farmers everywhere learned how to grow the Burbank potato. Their crops brought them much more money than if they had never learned Luther's secret.

Luther took his money and went to California. Why do you suppose he went so far to make a new home? It was because he knew that vegetables, fruit trees, plants, and flowers grow faster, larger, and more perfect in California than they do in Massachusetts.

He knew that the growing season is short in Massachusetts. The spring comes late, and the summer is short. The winters are long and cold. The soil is sandy and stony.

In California, there are long sunny summers. The winters are mild, and are rainy instead of snowy. The valleys where the people have their farms and orchards have deep, rich soil. In California, Luther could plant and harvest several crops every year. He could work to improve his vegetables and fruit without being delayed by snow and ice.



Luther Burbank improved hundreds of different fruits and vegetables, so many that we cannot tell you about them all. One of the first things he did was to improve English walnuts, almonds, and other nuts.

He also discovered how to grow better prunes. He grew plums and cherries that have no stones. He grew new kinds of apples, peaches, and tomatoes, and made old kinds better. He even grew a white blackberry!



Luther Burbank took some of the thorny cactus plants that grow in the sandy deserts in the West, and planted them in his garden. By and by he turned them into juicy plants without any thorns at all. They make good food for cattle. Before Luther Burbank did this work, the cactus plants were good for little or nothing.

He also grew lilies, roses, and other flowers that were more beautiful and smelled sweeter than any that had been known before.

Many people think that Luther Burbank's most important work was his discovery of how to improve potatoes. They are one of our most important vegetables.

Luther Burbank worked all his life to make food better and cheaper. He tried to make it possible for many people to live where only a few had lived. His motto was, "Do all the good you can to all the people you can." He was a good citizen, like members of Four H Clubs.

*Home Life Around the World*, by George A. Mirick, has a good story about Luther Burbank. There is another in Miss Salisbury's *Boys' and Girls' California*.

## Vegetable Cousins

SOME children were planning to have an exhibit of vegetables in their school. They were wondering about the best way to arrange their vegetables.

Helen said: "Let us arrange them by colors. We can put all of the red vegetables on one table, all of the orange ones on another, all of the yellow ones on another, and all of the green ones on another."

"That would be all right," said Don, "but wouldn't there be a great many on the green table?"

"And how few there would be on the white table," said Alice.

"We must think of a better plan," said Dick.

"I know," said Bill, "let us arrange them by cousins." He remembered that some of our fruits belong to the rose family and some to the citrus family. He thought that probably there were different families of vegetables, too. So he thought that some vegetables could be called cousins of others.

“But how shall we know which vegetables are cousins?” asked Dora.

“Let’s ask the science teacher to help us,” suggested Helen.

So the children went to see Mr. Brown, their science teacher. They told him about their exhibit. They told him about Bill’s suggestion. Mr. Brown thought it was a good one. He was glad to tell them about vegetable cousins.

“Asparagus is a good vegetable to start with,” said Mr. Brown. “It belongs to the lily family. Its cousins are lilies.”

“What other vegetables are there in the lily family?” asked Jane.

“Onions are members of the lily family,” answered Mr. Brown. “Onions may be called cousins to asparagus. They are members of the same family.”

“Do you children like a little mustard on meat, sometimes?” asked Mr. Brown. “There are several vegetable cousins in the mustard family. They are cabbage, cauliflower, turnip, radish, and rutabaga.”

“This is fun,” said Bob. “I never should have guessed that cabbages and turnips are cousins.”

“Tell us some more cousins, Mr. Brown,” begged the children.

"Well, let me see," said Mr. Brown, "we will take the goosefoot family next."

"What a funny name!" said Alice. "I should like to know what vegetables belong to this family."

"There are three, Alice," said Mr. Brown. "They are beets, spinach, and chard."

"To what family do carrots belong, Mr. Brown?" asked Grace.

"They belong to the carrot family," said Mr. Brown, "and their cousins are parsnips, celery, and parsley."

"How different these cousins are!" said Bob.

"Of course, you know the members of the pea family," said Mr. Brown; "they are peas and beans."

"That is easy," said Helen. "They look a good deal alike."

"What vegetable name rhymes with potato?" asked Mr. Brown.

"Tomato," shouted all the children.

"They are cousins," said Mr. Brown, "and red peppers and eggplants are their cousins. They belong to the nightshade family. Now, what vegetables have we skipped?"

"Lettuce," said Bill.

"Yes," continued Mr. Brown. "Lettuce be-

longs to the thistle family. Its cousins are artichokes and endives. Those two are not used as much as some others. Do you children know them?"

"We had endive in our salad last evening, instead of lettuce," said Bill.

"Yes, and one day we had artichokes. We had melted butter on them," said Grace.

"There is one more family that is quite important," said Mr. Brown. "It is the gourd family. Its members are gourds, pumpkins, watermelons, cucumbers, squashes, and cantaloupes. I believe these are all the vegetables I think of just now."

"Thank you for your help, Mr. Brown," said the children, and they went into another room to make the plans for their exhibit.

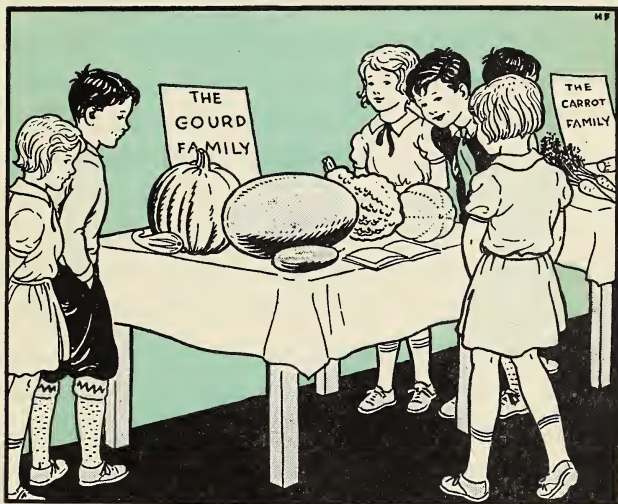
At last the day of the exhibit came. It was in the big assembly hall of the school. There was a table for each vegetable family.

The children covered the tables with shiny yellow oilcloth. They put a large card on each table. On each card was the name of a vegetable family. Then they arranged the vegetable cousins around the card.

On the wall behind the tables, the children fastened pictures of the vegetable cousins. They



had drawn some of these pictures. They had cut other pictures from magazines. They had written some stories about the vegetables. These were in notebooks which were laid on the tables with the vegetables.



Children from all the rooms in the school came to see the exhibit. They thought it very interesting to look at, and a very good way to learn new things about vegetables.

## Vegetables in Other Countries

THE stories so far in this chapter have told about vegetables that grow in our own country. Here are some stories about vegetables in other parts of the world. In many countries, people have the same kinds of vegetables that we do. They use them in very much the same ways.

### *Potatoes*

Have you heard potatoes called "Irish potatoes"? From this name you may think that the first ones grew in Ireland.

You may be surprised to know that the first potatoes grew in South America. They came to be called Irish because they grow so well in Ireland, and because they have kept the people of that country from starving when they could not grow other crops.

Potatoes grow best where it is fairly cool and damp. They grow well in Norway, a country in the northern part of Europe.

In some parts of France and Germany they are the chief food of many of the people. These two countries are in the central part of Europe.

Potatoes were not known in Europe until about a hundred years after Columbus discovered America. People who came from Spain found the Indians of South America eating potatoes which were shaped like our peanuts, and about that size. The Indians did not know any better than to eat the largest ones and plant the tiniest. Every year their potatoes grew a little smaller.

The Indians first soaked their potatoes in water and froze them. Then they dried them in the sun. They rubbed off the skins by walking on them with their bare feet. The potatoes turned black and as hard as stones. They had to be soaked again for three or four days before they could be cooked. The Indian name for this food was chuño. When you say this word, it sounds like "choon-yo."

In South America, chuño is still an important food among Indians who live in the mountains, where it is quite cold. Sometimes the Indians make chuño into a kind of flour which they bake into bread. They use it also to make soup. They boil the chuño in a pot with peas, beans, onions, and bits of fish or meat. Then they stir in a little salt and red pepper.

The explorers who came after Columbus took potatoes back to Spain. From there the new

vegetable spread into Italy and other countries. At first people planted potatoes in their flower gardens. Some of the blossoms were red, yellow, or blue instead of white as ours are.

Little by little, people everywhere learned that potatoes would keep them alive even if they had little or no food of other kinds. Now, farmers all over the world are glad to raise this healthful vegetable.

### *Sweet Potatoes*

Sweet potatoes grow best where it is warmer than the places where white potatoes grow. They often have odd shapes, and they are always yellow or orange-colored inside.

Once in a while in our country a sweet potato grows to be quite big. It may weigh as much as three pounds. But farmers in far-off islands near Africa have raised sweet potatoes that weigh fifty pounds. What a long time it would take even a big family to eat so large a one!

### *Tomatoes*

Are tomatoes one of your favorite vegetables? Think of how many ways you can eat tomatoes. They are good raw, stewed, or baked. What other ways of serving them do you know? We

can buy the juice in cans or bottles. It is a pleasant drink and very good for us.

The first tomatoes grew in Mexico, and in Peru which is one of the countries on the western coast of South America.

Until a hundred years or so ago, some people believed that there was poison in tomatoes. They thought the fruit very pretty and had bushes in their flower gardens. They called tomatoes love-apples, but they did not dare to eat them. People almost everywhere now know that they are good food.



### *Onions and Radishes*

In many of the countries of Europe, the people are very fond of onions. In the cities of Spain

and Italy peddlers sell onions on the streets. They tie them together by braiding the narrow leaves that grow on the tops. They carry the onions in strings hanging over their shoulders.

Onions and radishes were a favorite food of the workmen in Egypt, long, long ago. From that time to this people everywhere have been very fond of them.

### *Some Other Favorite Vegetables*

Parsley, which looks so pretty around the edge of a platter of meat or vegetables, was used in other ways thousands of years ago in countries across the sea. It was woven into the wreaths that were given to generals who won battles and to runners who won races.

In Germany, carrots are mostly used as we use them. But sometimes they are grated into bits and used to make a hot drink somewhat like coffee. Some of the butter-makers in our country color their butter with an oil taken from carrots. Many years ago, ladies in England liked to use the feathery green leaves of carrots to decorate their hats.

There is a kind of beet from which sugar can be made. This sugar tastes exactly the same as that made from sugar cane. Most of the sugar



made in Europe is made from beets. Our country makes a great deal, too.

In Europe, rhubarb is commonly used as an ornament in flower gardens. The big leaves make a pretty background for smaller plants. We use the stalks for sauces and pies. Sometimes rhubarb is made into medicine, as the Chinese learned to do thousands of years ago.

Perhaps you like coleslaw or sauerkraut. These are ways of serving cabbage that we learned from the Germans. Brussels sprouts and cauliflower belong to the cabbage family.

Peas, beans, squash, spinach, and lettuce make a large part of the food of the people who live in Spain, France, Italy, and other countries around the Mediterranean Sea. They do not eat as much meat as we do, because they do not have many cattle. They do not have as large pastures as we have.

In China and Japan, one kind of bean is often made into a sauce, and also into a candy of which the boys and girls are very fond. This is the soy bean.

The people of those countries eat the young stalks of bamboo as we eat asparagus.

The Chinese have many kinds of vegetables. In *Little Pear*, by Eleanor F. Lattimore, a little

Chinese boy goes to market by riding under the vegetables in the cart his father pushes. He sees what the market looks like.

### *Some Strange Vegetables*

Now we come to some vegetables that are strange to us, but which people in other parts of the world use all the time.

The Indians in South America eat the root of a plant called manioc (man'y-ok). It looks like a large parsnip. The tapioca we use in making puddings and soups comes from its roots.

Arrowroot flour is also made from manioc. It has this name because the Indians use manioc roots to heal wounds made by arrows. We use the flour in several kinds of crackers, one of which is animal crackers.

The Indian women find the manioc roots in the forests. They bring home large baskets of it on their backs. Their families are very fond of this food.

There is poison in the raw roots, so, before anyone is allowed to eat them, the women squeeze out the juice. Then they make a sort of wash-board and fasten rows of sharp stones on it. They rub the roots back and forth until they are torn apart, and look like fine white fluff.

Next, the women pack the roots into bags made of long leaves. They soak the roots in the river, dry them in the sun, and then soak them and dry them again. Now the manioc is free from poison. The women pound the roots into a fine powder which they call cassava (cass-ar'var).



Sometimes the people eat raw cassava mixed with water. It tastes a little like flour and potato mixed together. Sometimes the women make cassava flour into large flat cakes which they bake on stones made very hot in the fire.

Some of the natives in the jungles of Africa, too, prepare manioc for food in much the same way. They like to make the dough into a roll which they wrap in green leaves. They eat it raw, sometimes, but they like it better when it

is heated in the oil that comes from a palm tree.

In some parts of Japan, and in many faraway islands, there is another plant whose roots take the place of potatoes. This plant is taro (tar'oh). It is covered with huge dark green leaves about as big as you are. The leaves are heart-shaped and the biggest ones would almost do for umbrellas.

Sometimes the people eat the smaller leaves boiled, as we eat spinach or asparagus. They use some of the leaves as cups, plates, or even cooking dishes, too.

In Hawaii, where so many pineapples grow, the favorite food is poi. It is a paste made from the root of the taro plant.

Sometimes the people make a pudding from taro roots. The roots are chopped up fine, and then mixed with coconut oil. The mixture is pounded in bowls and spread on leaves. A fire is built in a hole in the ground. Stones are piled in. Then more fuel is heaped on top of them. When the fire has burned out, the hot stones are removed, and the ashes are scraped away.

Next, some of the stones are put back and covered with a layer of taro leaves. On these the pudding is placed. It is covered with more leaves. The rest of the hot stones are piled on, and finally

some earth is spread over the top. In a short time the pudding is cooked and ready to eat.

If you tell your mother about manioc and taro, she will surely say that she is glad she can give you potatoes to eat instead. How much easier they are to prepare! You would probably think they tasted much better than these strange foods with foreign names.

### *Breadfruit*

Would you believe it if someone told you that in some parts of the world you would find trees bearing fruit much like bread? In some of the islands in the southern part of the Pacific Ocean, there is a tree that does this. From it the natives get a great deal of their food.

It is named the breadfruit tree. Its fruit is about the size of your head, and looks like a melon. It has a rough, thick, green skin, marked with small squares.

Inside you find pulp that looks like bread dough, except that it is sometimes golden-yellow instead of white. The people eat ripe breadfruit every day. Sometimes they make it into a pudding upon which they pour coconut milk.

The natives cook breadfruit much as they cook taro. It takes about half an hour to bake the

breadfruit. The outside is a nice brown, and the inside is white like our loaves of bread. Cooked in this way, it tastes like sweet potatoes mixed with fresh rich milk.





## Some Foods that Grow on Trees

**D**ID you have to learn to like the taste of olives? Do you like them better green, or ripe, or stuffed with almonds or pimentos? Perhaps you sometimes make sandwiches spread with olive butter instead of peanut butter.

You would never eat very many olives at any one meal. But in some of the countries around the Mediterranean Sea, the people use olives every day. Many poor families never have any butter. Instead, they use oil that they press out of olives.



Sometimes men who are going on a journey take their food with them. They take a huge loaf of bread, a big bag of olives, and a few dried fish. This is enough, they say, for several days. The picture on page 137 shows a shop where they buy bread and olives.

In one of these countries, the people think their olives more precious than anything else. There are laws that set the exact day on which everyone may begin to harvest his crop. If anyone is found with olives in his house before that day, he is punished because his neighbors say that he has stolen them from their groves.

### *Olives, Where and How They Grow*

Italy, France, and Spain are the countries in Europe where the most olives are grown. In our own country there are many olive groves in California.

In Europe, some of the olive trees are thought to be more than 1500 years old. The oldest ones in California were planted about 150 years ago.

Olive trees that are set out when a boy is two years old will begin to bear fruit when he is ten years old. They will keep on bearing olives when he is an old, old man, and for many years after he is dead.

The trees have queer twisted trunks, which sometimes grow into shapes that look like strange animals. They have grayish-green leaves that look silvery in the sunshine. The trees are ever-greens. They have sweet-smelling flowers in the spring, and fruit in July.

Olive trees do not bear fruit every year. They have fruit one year, but not the next. The olives may be as small as acorns, or as large as plums. They are green when they are young. Then they turn yellow. Later, they turn to the greenish color which we have named "olive." When fully ripe, the color is purplish brown.

In Europe olives are picked after the hot, dry, dusty summer. They have to be picked one by one. They would be hurt if they were knocked or shaken from the trees.

Each picker carefully lays each olive in a basket which he has hanging from his neck. When his basket is full, he piles the olives on the ground and sorts them by sizes. Then they are loaded into little carts drawn by donkeys, and taken to the factories where they are packed to send away.

In some parts of Europe, nearly the whole crop of olives is used to make oil. Modern machinery is used in some places, but the old-fashioned way of making it is more interesting.

The workers crush the olives in a stone mill. They put them, with a lot of boiling hot water, into a hollow made in one big flat stone. Then they put another heavy stone on top. They harness a donkey to a pole fastened to the upper stone. Then round and round he goes. The two stones crush the olives, and the juice runs out.



The juice runs into big tanks. There it stays until the oil which forms part of the juice rises to the top. This is skimmed off. After several things have been done to it, it is poured into bottles and sold. Ask your mother to tell you some of the ways in which Americans use olive oil.

### *Some Favorite Nuts*

What kind of nuts do you choose when a bowlful is passed as a dessert? Do you like Brazil nuts best, or almonds, pecans, or English walnuts?





Perhaps you go into the woods near your home in autumn and hunt for chestnuts, acorns, butter-nuts, or other nuts that grow wild.

To the Indians, acorns and other wild nuts were an important food. Can you tell why? To the people of Italy, chestnuts are important now, just as they have always been. Sometimes they grind them into flour and make bread.

In France and Spain, almonds are one of the favorite nuts. The people sometimes cook them. In China, preserved walnuts are often the first course at dinner.

### *Coconuts*

In some parts of the world, coconuts are one of the chief foods of the people. They grow best in islands where the soil is sandy, and where there is heavy rain and hot sunshine. They seem to need the salty sea air.

In almost all the islands in the Pacific Ocean and also in the West Indies, many coconut groves have been planted. There are also many wild trees that have planted themselves. Some of the trees are close to the seashore, and lean out over the water.

When they are ripe, coconuts often drop from the trees without being picked. Thousands of



them fall into the ocean and drift about until they are washed up on the shore somewhere else.

The shells have a string husk, or cover. Also, the shells are so hard that coconuts can float a long time without being spoiled by the water. When they reach land again, they take root and grow into new trees.

To the natives of these islands, coconuts are useful in many ways. If anyone is hungry, he can break open a coconut and eat the meat. If he is thirsty, he can drink the juice, or milk as it is called. If he wishes, he can climb to the very top of the tree and pick a bud that tastes like cabbage.

Coconut meat is full of oil which the natives press out and use in cooking or for butter. The dry meat that is left makes good fodder for animals.

From the hard shells of coconuts, the natives make cups, bowls, dishes, and spoons.

The natives send many shiploads of fresh coconuts to our country and to Europe. They pick most of these coconuts by hand. Do you remember how men and boys climb date palms? Coconut-pickers climb their trees in much the same way.

After picking the coconuts, the men and boys

gather them into big piles, as close to the shore as possible. First, they tie the coconuts together, two by two, and toss them into the water. Next, they tie a great many of these pairs together, and so make long chains. Then they make many of these chains into big round rafts, which they float to a market or to the place where the coconuts are loaded upon ships. They use poles to push the rafts along.



There is one island where the people teach tame monkeys to climb the trees and pick the coconuts for them. The little animals wear collars to which long ropes are tied. After the monkeys have climbed into the trees, their masters pull the ropes in special ways to tell them what to do.

American boys and girls enjoy eating the meat and drinking the milk of coconuts. Their mothers often buy the meat cut up into small shreds, which they use in pies, cakes, and puddings.

Candy-makers fill many kinds of chocolates with cream made from coconut meat.

Ships bring whole coconuts to our country, and also coconut meat that has been dried. This is called copra. There are many ways of using it.

Some factories make the coconut meat into a kind of lard, into a kind of butter, or into oils used in cooking or in salad dressing.

There is a good story, with pictures about Hawaii that you would like to read. It is called *One Day With Manu*, and is written by Armstrong Sperry. Among other things it tells about coconut trees, and an Hawaiian feast.

### *Brazil Nuts*

There is another nut whose meat tastes somewhat like coconut. This is the Brazil nut, the three-sided one that has such a hard shell.

Brazil nuts grow on tall trees in Brazil, a country in South America. They are really the seeds that grow inside the fruit of these trees.

If you were walking through a forest in Brazil on a windy day, you would have to keep your eyes open. The wind might blow a big thing like a croquet ball down on your head. These are the fruit of the tree. They fall very easily.

They look a good deal like coconuts. Their

shell is harder, almost as hard as iron, and has to be broken with an ax. Inside you would find twenty or more of the Brazil nuts. You would find them packed together like the sections of an orange.

South America is the only part of the world where Brazil nuts grow. Our other favorite nuts grow in our own country. California raises most of our pecans and walnuts. Pecans come also from Texas, Oklahoma, Georgia, Mississippi, Louisiana, and several other Southern States.

Frances Fultz has written some stories about nuts that you will like to read. Her book is *The Fly-Aways and Other Seed Travelers*.

# Cereals and Bread

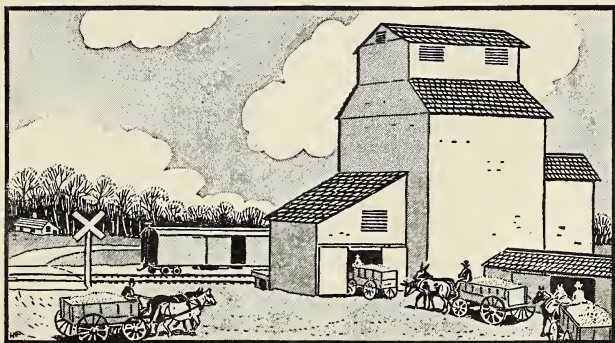
**Y**OU know that bread is made from flour, but do you know what flour is made from? Do you know how it is made?

Do you know where our largest crops of wheat, corn, rye, and oats grow?

Would it surprise you to discover that rice is more important than either wheat or corn to the people of China, Japan, and other faraway lands?

The stories that you will read next answer all these questions, and tell you new things about the cereal crops and the breads of the world.

They tell you about the machines that are used, and about the hard, old-fashioned ways of working by hand in grain fields, flour mills, and bakeries.



## The Grass Family

WE USE grass in many ways. We use it for the lawns around our houses. We use it in our fields to feed our cattle. And we use the seeds, or grains of some kinds of grass to make flour for bread. You may be surprised to know that this is true.



The grass family is very large. Some of its members are wheat, corn, rice, oats, rye, barley, and millet. Here are pictures of these seven grasses, in order from left to right. You can learn to tell them apart when you see them growing if you notice the differences in the leaves, the stalks, and the heads.



The grasses we shall read about in this book are the grasses that people all over the world grow to feed themselves and their cattle. They are called cereals. We shall learn what these grasses look like, how they grow, where they grow, and how they are used.

### *How Men Discovered Cereals*

Do you suppose there ever was a time when people did not grow cereals for food? It is hard to believe, but once upon a time, thousands and thousands of years ago, not a single man in all the world plowed a field, sowed grain, or reaped a harvest.



Men everywhere were wanderers. They had no homes except in caves. They were always

moving from one place to another. They had to have food, of course, but they did not get it by sowing seeds, raising plants, and harvesting crops.

Men got their food by hunting. With strong sticks to which they had fastened sharp stone points, they killed animals and birds. They caught fish with hooks made from the bones of animals. They roamed through the woods and found wild nuts, fruits, and berries. They dug up mosses and the roots of trees.

These people lived in one place until they had killed or frightened away all the animals and birds and fish that were good to eat. Then they had to find a new hunting ground.

After many, many years, men learned how to tame some of the animals, and to raise them for food. They began to have herds of cattle and sheep. Instead of being hunters, men came to be herders, or shepherds. Once in a while they still had to move their homes. When their herds had eaten all the grass in one place, the men had to take them to fresh pastures somewhere else.

No one knows when men found out that the seeds of wild grasses were good to eat. Probably someone discovered it by chance. Perhaps some boys or girls saw birds eating the seeds from the heads of the yellow stalks. So the children may

have tasted the little grains, too. They found that they were good. They may have taken some seeds to their fathers. Then the whole family began to hunt for this new kind of food.

### *The First Farmers*

Later still, men came to be workers of the soil, or farmers. They learned how to scratch the surface of the soil with a pointed stick, so that seeds could be covered and have a soft spot in which to grow. They learned how to sow the seed and how to cover it with earth by dragging the branch of a tree over the field. At harvest time they cut down the plants with knives made from sharp stones.

By and by men learned that they could raise more food if they took care of their crops. Then they built huts close to their fields and lived there year after year. They became farmers and were not wanderers any more. They got more and better food for themselves and their animals than they had ever had before.

The farmers of those long-ago times would hardly believe their eyes if they could visit the great farms in our country and see how tall the grass plants grow, how fine the grain that comes from them is, and how the farmers use machines

to help them do their work.



When you look at this picture, you get a good idea of the way the lake-dwellers and other early people plowed their fields. What hard work it must have been!

## Wheat for Our Bread

WE ARE going to learn about wheat first because it is one of the most important of the grasses. It is used for the food of people and of animals. It grows in many countries, but the great wheat countries are the United States, Canada, Russia, Argentina, India, and Australia. These countries raise enough wheat for themselves. They send wheat to other countries, too.

In our own country, wheat is one of the crops that grows almost everywhere, but there are some States where it grows better than it does in others.

### *Where Most of Our Wheat Grows*

Our chief wheat-growing States are Kansas, North Dakota, South Dakota, Montana, Nebraska, Oklahoma, Washington, and Illinois. If you look at a map, you will see that most of these States are in the central part of our country.

Perhaps you are wondering why more wheat is raised in this part of our country than in any other part. There are two reasons.

The first reason is that the wheat plant needs

cool weather. Where the winters are not too cold, wheat is often planted in autumn. It grows during the cool autumn weather. It lives through the winter. It grows again in the cool spring weather.

When wheat is planted in the spring, it has to be planted early because it needs cool moist weather. It needs a warm dry summer for growing. The weather in the summer must be sunny to help the grain to ripen and to dry. The days must be sunny when the grain is harvested, too.

The States where the wheat grows best have weather like this. There is just enough rain, not too much or too little, and it comes at the right times.

The second reason why wheat grows well in our Central States is this. The soil is just right. It is very rich and deep. In some of our States in the East and in the South, the black soil does not go down very far. If you dig down, you soon come to sand that is full of stones. But in the great wheat States, the black soil is often about six feet deep.

There are almost no stones, either little or big. The roots of the wheat plants can go far down into this black soil and grow strong and firm.



## *How Wheat is Planted*

Let us visit a wheat farm in this part of our country and see how wheat is planted, how it grows, and how it is harvested.

If you have ever planted a garden, you know just what the farmer has to do when he plants wheat. First, he has to get the ground ready. If you have a small garden, you use a spade, a hoe, and a rake. First, you spade the ground. Then you hoe it. Then you rake it and make it all soft and smooth for your seeds.

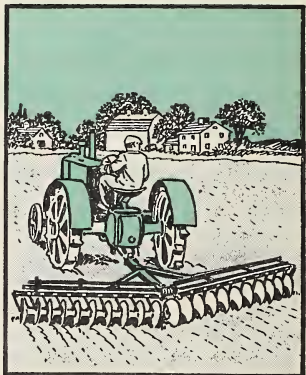
The farmer does all these things, but he does not use hand tools such as a spade, a hoe, and a rake. He uses big machines.

Instead of a spade, the farmer uses a plow. The plow is pulled by horses or by a tractor. If you have driven out into the country in the spring or in the autumn, or if you live in the country, you have seen the farmers using plows. All farmers use plows to make the ground soft.

As the plow is pulled across the field, it cuts out a strip of soil and turns it upside down at one side. The little ditch or track that the plow cuts is called a furrow. Each time the plow goes across the field it makes a new furrow. The soil

cut from each furrow is turned over into the furrow made the time before.

A plow makes only one furrow at a time. But on the great wheat farm where we are visiting, the farmer uses gang plows. A gang plow is shown in the left-hand picture. You can see that it is cutting several furrows at once. Sometimes gang plows cut as many as twelve furrows. The right-hand picture shows a harrow.

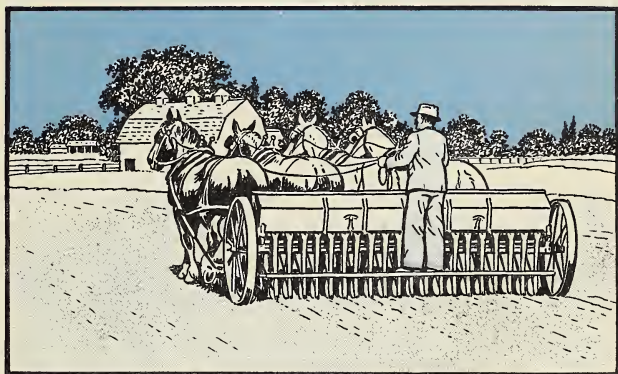


After you have spaded and hoed the ground in your little garden, you know the soil is soft and loose, but it may not be smooth. So you take your rake and you make the ground as smooth as you can.

The farmer smooths the ground, too. But instead of a rake, he uses a harrow. The harrows are big machines that are used after the plowing

is finished. They are often pulled by tractors, too. They work just as a huge rake would. Some harrows have teeth and some have little sharp wheels. Harrows are pulled back and forth over a field until all the ground is soft and fine, and ready for the wheat seeds.

When the ground is soft and loose and smooth in your garden, you make rows for the seeds. You put each seed in its place in the row, and then you cover the seeds with earth. You pat the ground to make sure the seeds will stay right where you put them.



The farmer does not plant wheat seeds by hand. He uses a machine called a drill to sow the seed. It has a long box fastened between wheels. There are small holes in the bottom of the box. Little

tubes go down from the holes, and the seeds drop through them to the ground.

In front of each tube is a tiny shovel that digs a furrow as the machine moves along. Right behind each little shovel, the seeds keep dropping into the furrow. The earth from each side slides back into the furrow and covers the seeds.

A tractor sometimes pulls two or three drills, so a strip of ground thirty or more feet wide is sowed each time the drill goes across the field.

### *How Wheat Grows*

After you have finished planting your little garden, you water it. You watch it, and can hardly wait for the little plants to peep out of the ground. You are glad to have warm sunshine, and you are glad to have rain. You know they will help your little plants to grow.

The farmer watches for his wheat to grow, too. But usually he does not water it. In some parts of the country there are wheat farms that have to be watered in much the same way as the orange trees are watered. Long ditches bring water from a lake or reservoir to the fields. In these ditches there are gates, which hold the water back until the farmer is ready for it. Whenever the plants need water, he opens the gates

and lets the water flood the grainfields. When the farmer has enough water, he shuts the gates again.

If the farmer could look down into the ground and see what was happening, he would first see tiny rootlets growing out of the wheat seeds and down into the ground. He would see also a little pointed spike pushing upward toward the air. When it pushes through the ground, each little spike looks like a blade of grass.

Little by little the stem of the wheat plant swells out at the top and grows into what is called a head. By and by the head is covered with tiny flowers. These flowers last a few days, and as they die the seeds or grains begin to grow. Then, after a few weeks, the plants begin to turn yellow and we know that the seeds are getting ripe. Soon, heavy yellow heads, filled with seeds, are bending the stalks. They nod in the wind. The wheatfield has become an ocean of waving gold.

When the wheat is ripe, the heads or ears are very heavy because they are so full of seeds. This means that the stems or stalks must be strong and have firm roots to keep the plant standing up straight. The rich deep soil gives the firm, strong roots a good hold in the earth.

A little girl who lived on a farm in the great

wheat-growing part of our country was taken to the seashore for a summer vacation. One beautiful sunny day she stood on the sandy beach and looked over the deep blue water. She had never seen the ocean before.

At first she said nothing. After a while her mother asked, "Don't you like it?"

"Oh, yes," answered the little girl, "I like it very much because it has waves like the wheat-fields at home."

The waving fields of wheat do look something like the ocean but they have a different color. They are green before the wheat is ripe. Then they turn yellow.

If you walked through a wheatfield, you would feel almost as if you were wading through water. The stalks grow very close together. You can make a path through them, but it closes up behind you just as water does.

### *A Visit to a Wheatfield*

Now, let us go with our friend Mr. Brown, one of the farmers, and see the ripe fields of wheat. His wife puts up a lunch for us because we are going to be away all day.

As soon as breakfast is over, we start out. We ride on straight roads that pass through the fields



of golden wheat. Some of the fields belong to Mr. Brown, and some to other farmers. All morning long, whichever way we look, we see nothing but wheat, wheat, wheat. It is blowing and bending and waving in the wind. Miles away is the line where the blue sky seems to touch the golden fields.

There are no woods, and only a few small trees growing along the banks of little rivers. There are some farm buildings, with trees around them. From a distance they look like little islands in the ocean of wheat.

There are few high hills. Much of the land looks as level as a floor. In some places there are gentle slopes that make what is called rolling country.

Now it is noon and we are going to have our lunch. We have come to a river with a few trees along its banks. We find a good place to park the car beside the road. We are glad to get out and stretch our legs after riding so long. Mr. Brown says we are going home a different way, but we shall still see nothing but wheatfields.

We have our lunch and we take a rest in the shade. Then we get into the car and ride toward home.

We ask Mr. Brown why it is necessary to grow

as much wheat as this, and he says it is because the people of the United States eat so much bread made of wheat flour. A great deal of our wheat is sent to Europe, too.

Mr. Brown tells us that sometimes great swarms of locusts or grasshoppers eat the green wheat-stalks while they are growing. Of course he has to fight them, and other kinds of insects, or he will lose his crop. Another enemy is too much very hot dry weather.

He doesn't have to worry much about weeds. Weeds cannot grow very thick in a wheatfield because there is no room for them. Besides that, a good farmer makes sure that no weed-seeds are among his grain before he sows it.

After a long afternoon drive through miles and miles of wheatfields, we reach Mr. Brown's house again. We are glad it is almost dinner time.

### *How Wheat is Harvested*

When it is time to cut the wheat, the farmer uses machines. Perhaps he uses a binder. On one part of the binder are moving knives that cut off the wheatstalks not far above the ground. They fall on a platform. On the platform is a wide moving belt made of canvas which carries the stalks up into another part of the machine.

There the stalks are packed into a bundle with the heads all pointing the same way. As each bundle gets to be the right size, iron fingers tie a string around it.

As the machine goes through the field, these bundles are dropped off, a few at a time. Men who follow along behind the binder set the bundles up into little stacks or shocks, as they are called. The men are careful to set the bundles with the heads up. Then a bundle is spread on the top to make a cap so the heads will not get wet when it rains.

### *How Wheat is Threshed*

The farmer does not leave the shocks of wheat in his fields very long. He is eager to get the wheat seeds, or kernels, out of the heads. So as soon as the wheat is dry enough, he uses a threshing machine.

As each bundle of wheat starts into the threshing machine, the string that held it together is cut. In the first part of the machine, the seeds are beaten out of the heads. In the next part, the seeds are separated from the straw. Then the seeds are sifted several times to get rid of all the straw. In the last part, seeds run through a tube out of the machine, and men catch them in bags.

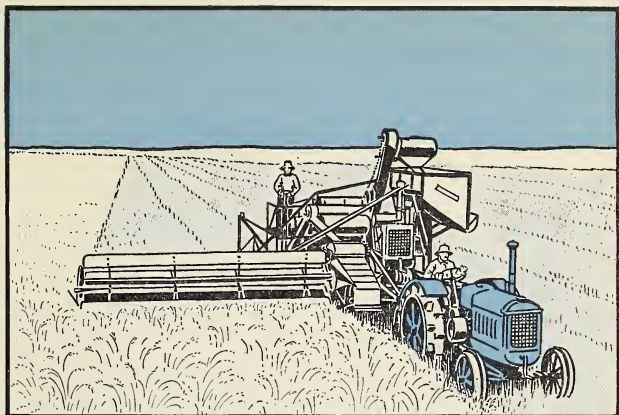
The long stems or stalks of the wheat plants are blown out of the threshing machine and piled on the ground. If you drive through the country at threshing time, you see this yellow straw blowing out of the threshing machines. From a distance it looks like a cloud of yellow dust.

In the book called *The Farm on the Hill*, by Madeline D. Horn, you will find a good story about threshing wheat.



### *The Great Machines Called Combines*

On the largest farms the farmers use giant machines called combines, which are reapers and threshers all in one. They are pulled through the fields by tractors, or by many horses.



The combine first cuts the heads off the wheat. These fall on a platform and a belt carries them up into the machine. Then steel fingers, that work much faster than any man's fingers could work, knock the kernels out of the heads. Machinery pours the kernels into sacks, sews up the sacks, and drops them into wagons. It would take a great many men to do the work that one combine does.

### *After the Harvest*

The farmer uses both the wheat seeds and the wheat straw. He uses the seeds, or grains, in three ways. He saves some for planting the next year. He feeds some to the farm animals. But he sells most of the grain.

The farmer uses the straw, which you know is the old stems and leaves of the wheat, for food for the farm animals. He spreads some on the floors of their stalls, for them to sleep on.

### *Grain Elevators*

The men who buy the grain store it in tall buildings called grain elevators. There is a picture of one on page 147. In the country where the great wheat farms are, you see many of these elevators. They are always near the railroad or near a wharf, so that trains or boats can come and get the grain. They take it to the mills that grind it into flour.



## Raising Wheat a Hundred Years Ago

LET us pretend that you are a little boy or a little girl of about a hundred years ago. Your home is on a farm in Ohio. Your father is getting ready to plant a small field of wheat. He has no big machines to work with.

First he does the plowing. He hitches a horse to a little iron plow and lets you ride on the horse's back. He walks behind the plow and guides it. You ride through the field, back and forth, and the plow cuts just one furrow at a time. It takes many hours to finish the whole field.

Then your father harrows the plowed ground. The harrow is homemade. It is a wooden frame, shaped like the capital letter A, with several cross bars. Through each piece of wood is a row of large, pointed iron spikes, or teeth. The points of the teeth stick down into the ground. Your father puts a big rock on the top of the harrow to make it heavy, so that the spikes will stick deeper into the ground.

Your father hitches the horse to the front, and

drives up and down the field until every lump of earth is broken up.

Your father sows the seed by hand. He starts at one corner of the field, carrying a big sack of seed in front of him. The sack is held by straps across his shoulders. The end of the sack nearest his right hand is left open. As he walks along, he dips his hand in at the open end of the sack, scoops up a handful of seed, and scatters it on the ground. He tries to scatter the seed evenly on every part of the field. He has to fill his sack over and over again, and he walks many miles, back and forth, before he finishes his sowing.

After the field has been sowed, your father drags over it a big bush or a small tree with bare branches. This scrapes up a little of the loose earth and covers the seed with it.



Now let us imagine that it is harvest time. First your father and his men cut a wide path

around the edges of the field. Each man uses a hand scythe. This has a long curved handle and a long curved blade at the end. It is shaped something like the capital letter L. The path gives the men room to swing their scythes when they cut the first row of wheat.

The scythe may have a cradle on it. A cradle is a wooden frame that holds the wheat after it is cut so that an armful can be laid on the ground with all the heads pointing the same way.

After these men cut the wheat, other men tie the armfuls of wheat into bundles called sheaves. They tie the bundles with strips of wheat straw instead of with strings. After the whole field has been cut, all the sheaves are gathered into the barn.



Then comes the threshing. The wheat is laid in rows on the barn floor. The head of each sheaf is laid on the head of another sheaf.

The men work with flails. A flail is made of two pieces of wood, one four feet long, and one three feet. They are hinged together by two strips of strong leather. The men swing the flails above their heads, and snap the short pieces of wood down upon the wheat with a loud whack. This beats the kernels out of the heads.

The wheat is threshed once, and then is turned over and threshed again. After that, the men pick up the straw on pitchforks and toss it out of the way. On the floor they find the kernels, mixed with broken pieces of stalks, with bits of straw, or chaff, and dust.

The next day the kernels are sifted. This is to separate them from the bits of straw. The sifting is done with big sifters shaped like drums. But instead of two heads made of sheepskin, they have only one head. This is made of strong strings, woven together criss-cross like the strings in a tennis racquet. Some of the sifters have the strings wide apart, and some have them close together.

First the men shovel the kernels and straw into the sifter that has the widest spaces between the

strings. They shake it for a while and then pour into a smaller sifter everything that has sifted through. In all, the men use four sifters. This is so that everything except the kernels will be sifted out by the time the wheat has been shaken through all four.

These old-fashioned ways of raising wheat are still used in some parts of the world. How different they are from the modern ways used on the great wheat farms in America!

If you would like to read more about the changes in farming that have taken place, read *The Farmer Sows His Wheat*, by Adele G. Nathan. It tells about the old-fashioned ways of working by hand, and the present ways of working with machinery.

## Raising Wheat in Far-Away Lands

WE HAVE learned that in our country machines do a great deal of the work on the wheat farms. The small farms have small machines, and the large farms have large machines. In many parts of our country the farmers raise wheat. Some of them have small fields of wheat and large fields of other crops. It is just the same as this in faraway lands.

Other countries that have good soil and a good climate raise great wheat crops and use machines like those you have been reading about. Russia, that very large country that reaches all the way across Europe and Asia, is one of these. Australia, in the southern part of the Pacific Ocean, is another. Argentina, in South America, is still another. Canada, just north of our country, is one more. In England, Germany, France, and the other countries of Europe, the wheat farms are not so large. The farmers use small machines, and some of them work with hand tools.

In most parts of Japan, it is impossible to use



big machines. That country is made up of islands. The islands are full of hills and mountains. There are few plains or lowlands. Most of the farms are on the sides of the hills. The farmers pile up the earth so that it makes wide steps, or terraces as they are called. The lowest terrace is at the foot of the hill, and the highest one is near the top.

Each terrace is held up by a wall of big stones. This keeps the rain from washing the earth to the bottom of the hill. Most of the farmers in Japan cannot use machines like ours because tractors cannot climb steps.

On some of these terraces the farmers grow wheat. They plow with big wooden shovels, and harrow with hoes that have three teeth. They reap the wheat with sickles. A sickle is a knife curved like the new moon. It has a straight handle. A man swings it with one hand. You can imagine how slowly he reaps the wheat.

In some of the small villages of China, we should see the people using very old-fashioned methods of threshing wheat. They use threshing floors. These are large circles of bare earth. There are no stones on a threshing floor, just smooth earth that has been pounded and walked upon until it is hard.

The farmers bring the wheat from the fields and spread it on the threshing floors. Oxen pulling heavy rollers of stone or wood are driven over it. The oxen go around and around tramping on the wheat and pulling the heavy sledges. It takes many hours to break up the straw and to separate the kernels from the heads.



When a windy day comes, the men and women pick up the kernels and bits of straw on shovels. They toss them into the air, and the wind blows the straw away. The kernels are heavier, so they drop to the ground. Then the men and women pick them up.

Oxen are used in the fields to pull the plows in many countries in Asia, and Europe, too. And in some countries donkeys and even camels are used

to pull plows and to help with the other work in the fields.

In Egypt, along the Nile River, the farmers do not always plow the ground before they plant their wheat. For a while each spring, the Nile River overflows its low banks. The water of the river is muddy. As it spreads far and wide over the level fields, it leaves thick, rich mud everywhere.

Most of the water sinks into the land. As the river gets lower, the rest of the water in the fields runs back into the river through ditches.

The farmers are ready to sow their seed as soon as the fields have dried enough. Farmers who do not plow their fields drop the wheat seeds into the mud. Then boys with clappers walk up and down the fields all day long, day after day, to scare away the birds so that the seeds will have a chance to sprout.

If any of the fields get dry too fast, the men and boys cover the dry patches with leaves. The sun is so hot that this must be done to protect the seeds and the little shoots of wheat.

Toward the end of summer, the fields of growing wheat sometimes get too dry. The farmers then have to lift water from the Nile and pour it into the ditches so that it will flow over the

land. Many of them have modern pumps that work by machinery. Others use old-fashioned ways.

Sometimes farmers use a big water wheel set on the bank of the river. Around the edge are jars that dip into the river when the wheel turns. An ox, a cow, or perhaps a camel is hitched to the wheel to turn it, and often a little boy is the driver. The jars come up out of the river dripping full.

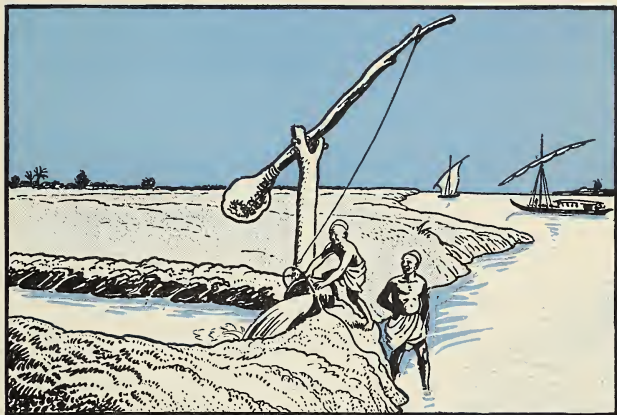
One after another the jars are emptied into the ditches. They come so fast that the water flows all through the fields. Small ditches divide each wheatfield into squares like those on a checkerboard.

Many farmers in Egypt have another old-fashioned way of getting water from the Nile. They use a machine called a shaduf (shar-doof'). This has a bucket made either of leather or of basket work so tightly woven that it will not leak.

The bucket is fastened to one end of a long strong pole. At the other end is a heavy lump of clay. The middle of the pole rests on the top of a post driven into the ground close to the bank of the river.

A man or a strong boy pulls on a rope, and lowers the bucket into the river until it is filled.

Then he lets go. The lump of clay is heavier than the bucket full of water, so up comes the bucket out of the river. Another boy empties the water into the ditch. After a lot of buckets have been hoisted up and emptied, there is so much water in the ditch that it begins to flow into the wheatfields.



It seems that some of the farmers in faraway lands work very hard to grow their wheat. But they are willing to do this in order to have bread to eat.

## Flour Mills, New and Old

**B**EFORE the grains of wheat can be used by people for food, they must be made into cereals or into flour. You have probably eaten cereal made of wheat for breakfast. But the way you have used wheat most often is in bread. The flour for making white bread comes from wheat. The flour for making whole-wheat bread comes from this grain, too.

The grain is brought from the elevators in the country to the flour mill. Most large flour mills are in cities. There are many flour mills in the city of Minneapolis, Minnesota.

The flour mill is a large building filled with machines that grind the wheat seeds into flour. First these machines shake the wheat through screens to take out the bits of straw, weed seeds, and other things that got mixed with it in the fields. Then the kernels are washed and dried. When they are dry, they go into the big grinders that crush them very fine. They are ground over and over again to make them into fine flour. The fine flour goes through screens that are made



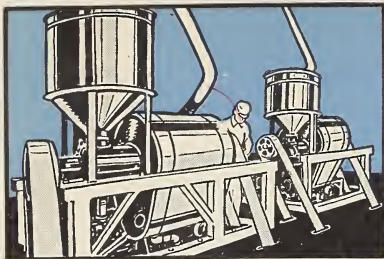
of silk cloth. It is screened over and over again through these silk screens.

After the flour has been through these silk screens, it is as soft as velvet. Then it is packed into sacks or barrels and sent to warehouses or to the stores. The stores sell it to bakers, to people in the city, and to people in the country. They sell it to people everywhere who wish to make bread and cake and cookies and pies.



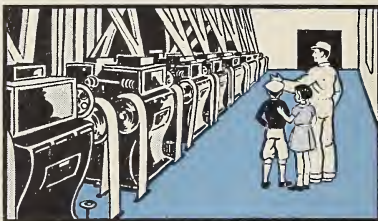
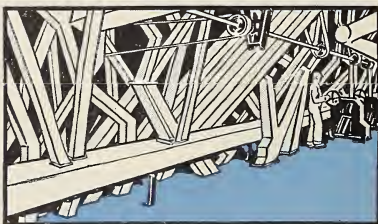
Whole-wheat flour is not ground as finely as the white. The outside dark skin is not separated as is done in making white flour. The whole kernel of wheat is merely cracked and ground.

Years and years ago, wheat was made into flour in ways very different from the way we do it now. Even today we can find people using almost every kind of mill that has ever been known.



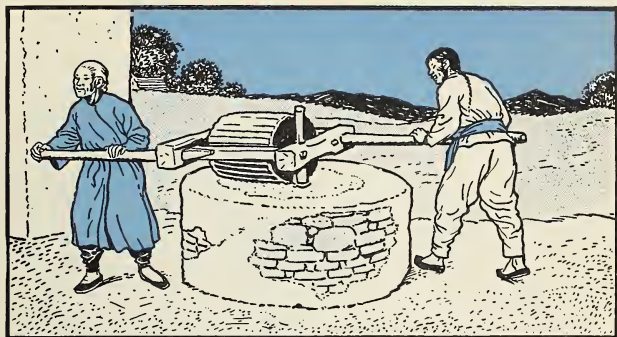
*These are some of the machines in a flour mill that crush and grind the grain.*

*A flour mill seems to be filled with spouts like these. The grain is carried through them from one machine to another. Finally the flour comes to the sifting and bolting machines.*



*This is the packing room, where bags and barrels are filled with the fine velvety flour.*

The first mill was a wide stone whose top had been hollowed in the middle to make a sort of bowl. The wheat was spread in this hollow and the people pounded it and rubbed it with another stone.



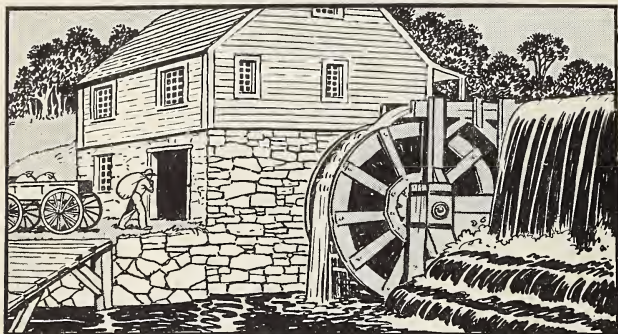
Later on, men found ways of using heavier stones. The picture shows what they did. Sometimes they harnessed oxen or donkeys or mules and made them do the work of turning the stone mills.

If you could visit China, you would see many of these mills at work today.

The best way of turning a mill in the olden times was by using a water wheel. Of course this could be done only when the mill stood beside a river where there was a strong flow of water.

Have you ever seen an old-fashioned mill? The picture shows a mill dam, the waterfall that it makes, and the big wheel that the waterfall turns.

Perhaps you can make clay models of some of the grinding mills that you have been reading about. You and your father can quite easily whittle out and make a wooden water wheel that will spin around if you hold it under an open faucet.



If you can get some kernels of wheat, you can try to make flour by pounding them between two stones. How would you like bread made from coarse flour such as this?

## Our Big Corn Crop

CORN is another member of the grass family. It is used for food for people and animals. It is used in many other ways, too, as we shall see in this story.

When you say the word "corn," what do you think of? Do you think of the fresh green corn you eat from the cob in the summer? Do you think of popcorn? Do you think of the corn that comes out of cans? Or, if you live on a farm, do you think of the corn you feed to the chickens or the pigs?

Perhaps you may think of cornflakes or corn syrup or hominy. They are all made from corn, too. And then, of course, there are cornmeal mush, corn muffins, and johnnycake.

### *Sweet Corn*

Corn is sometimes called maize. You know how it grows, don't you? Nearly everywhere in our country the families who have a vegetable garden plant a few rows of sweet corn. It takes a good deal of room because it grows so tall and the leaves branch out.



When corn comes through the ground, it looks like coarse grass. It grows fast, and it has a strong tall stalk and long, thick leaves. You watch for the ears to come, and as soon as they do you know it will not be long before you have some good fresh corn to eat. You watch the silky threads at the ends of the ears. When they turn brown and begin to dry, you know your corn is ready.

How much better corn tastes if you have helped to raise it yourself! None that your mother buys at the store can be quite as fresh as the corn you pick in your own garden.

Only a few minutes after you pick the ears from the stalks, they are in a pot of steaming water. As soon as they are cooked, they are brought to the table. What a treat you have when you nibble the juicy kernels from the cob!

If you do not have sweet corn in your garden, you can buy it at the store. Some farmers, or truck gardeners, grow sweet corn to sell to the stores. Some sell part of their sweet corn to the factories where it is put into cans. Some mothers like to can some of the sweet corn that has grown in their own gardens. How good it tastes in the winter!



## *Popcorn*

Another kind of corn that boys and girls like is popcorn. Do you pop yours in an electric corn-popper, or in the old-fashioned kind which is a wire box on a long handle? Do you pop the corn over the fire in the fireplace, or in the furnace, or on a stove in the kitchen?

What fun it is to hear the little kernels pop open and to see them jump up and puff out big and white and crisp!

At Christmas, when your father was a boy, the children used to make ropes of popped corn by stringing it on a thread. Then they trimmed their Christmas tree with these long ropes of popcorn. Sometimes they made popcorn balls for the tree, too.

## *Field Corn*

Most of the corn the farmers grow is not the sweet corn we eat as a vegetable. It is not popcorn. It is field corn. It grows in the fields just as the sweet corn grows in your garden. Field corn is sometimes used as a vegetable, like sweet corn, before it gets ripe and hard. Some of the field corn is for food for the animals. Some is used to make corn meal, corn cereals, corn syrup, and corn starch.

The greatest part of the corn crop is either dent corn, flint corn, or flour corn. Dent corn has this name because each little kernel has a dent or dimple in the top. The ears are larger than any other kind, and so are the kernels. This corn is either orange, yellow, white, or red. It is the kind usually grown in the central part of our country where the large farms are.

Flint corn has hard, smooth kernels and the color is sometimes golden-yellow, sometimes deep red, and sometimes blue. It grows well in the northeastern part of our country.

Flour, or soft, corn is the softest of all. The kernels are nearly always white. It is the kind the Indians raised in the days of the Pilgrims. Now it is grown mostly in Texas and in other parts of the South.

### *Ways of Using Corn*

People everywhere like food made of corn. One boy who was asked which kind he liked best had a hard time deciding how to answer. At last he said, "I like johnny cake and muffins and corn-flakes and corn mush and canned corn and succotash and hominy and hulled corn and corn on the cob and popcorn."

Then he had to stop for breath. His mother

had a chance to say something. "The lollipops and gum drops you buy at the store are made with corn sugar. And don't forget the candy I make," she said. "I often use corn syrup in that, and in ice cream, puddings, mincemeat, jellies, and jams. I use cornstarch in cooking, too."

### *The Corn Belt*

Corn is the most valuable crop our farmers grow. Our country raises more corn than all the rest of the world together. And most of our corn is grown in the part of our country known as the Corn Belt.

The States of Iowa, Illinois, Nebraska, Missouri, Indiana, Minnesota, Ohio, and Kansas are in the Corn Belt. You remember that some of these States raise big crops of wheat, too.

There are a number of reasons why corn grows well in these States. The land is level. The soil is deep and rich, and has few big stones in it. It is not baked hard by the sun in dry weather.

All through the growing season many of the days and nights are hot. This is what corn needs. Usually the rainy weather comes just when it is needed to make the ears fill out. It is dry and cool when the corn is ripening.

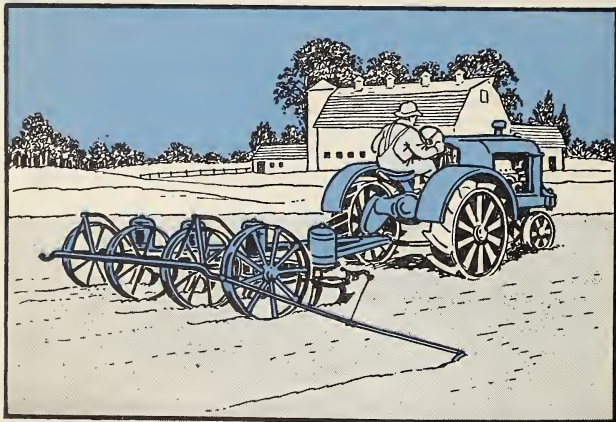
Corn has to have a longer summer and warmer

nights than wheat needs. It needs more rain. Sometimes, when there is a long time without any rain, the long green leaves of the corn plants roll up tight during the hot part of the day. This is to keep any water that the plant has stored up from drying off into the air. Then, during the night, or when the rain comes, the leaves unroll.

### *How the Farmers Grow Corn*

Before a farmer plants corn, he prepares the ground just as he does before he sows wheat. He plows and harrows the ground until it is fine and soft and free from weeds.

When he plants the seeds, he uses a machine that plants two rows at a time, or else a larger machine that plants four rows.



Sometimes he makes the rows only one way across a field. Sometimes he plants rows both ways, like a checkerboard.

Corn has to be weeded. Corn and weeds can grow together because there is a little space between the corn plants. Before the corn grows tall, the weeding is done by machines that stir up the soil between the rows. This pulls up the weeds and they die.



Corn grows taller than wheat does. In your garden, the tassels at the top of the stalks may be higher than your father's head. In the Corn Belt many of the plants are so tall that you could stand on your father's shoulders and still not reach the tassels.

On the best field-corn plants, there is only one ear on each stalk. It grows out at a joint, about halfway between the top and the bottom of the cornstalk.

A full-grown cornfield is a beautiful sight. The stalks stand straight and tall. They are in long straight rows and their golden tassels sway and nod in the wind. The broad green leaves blow like flags and make a soft rustling sound.

### *Harvesting Corn*

There are three ways of harvesting corn. One way is to put the stalks or ears into a silo, which is a tall, round tank. Another way is to set up the stalks in shocks, which look somewhat like Indian tepees in the field. A third way is to husk the ears from the stalks in the field and store them in sheds. The farmer's name for these sheds is cribs.

Suppose the farmer puts some of his corn crop into a silo. He begins harvesting while the stalks and leaves are still green. The ears are full grown, but the grains are not yet hard. He cuts off the stalks near the ground. He may do this work by hand, using large knives, called corn knives, or he may cut the stalks off by machines which are pulled by horses or tractors.



After the stalks are cut down, they are loaded on a wagon or truck and hauled to the silo. At the silo, the stalks are put into a machine which chops them into small pieces. Another part of the same machine carries the pieces to the top of the silo and drops them into it.

When the silo is filled, it is closed up. Nothing is done to it for several weeks. During that time the chopped corn gets so hot that it cooks itself. Corn harvested in this way is called silage. It is used as food for the farm animals. The leaves and the stalks and the cobs are mixed with the grains, but farm animals seem to like it about as well as we like canned corn.

When corn is to be cut and put into shocks, it must be nearer ripe than corn which is put into the silo. Most of the leaves should be brown. The ears should be almost hard, but not yet as dry as they will be later.

On most small farms, the corn is cut down by hand. Men use long, strong knives for this work. Each man walks between two rows of corn. As he cuts the stalks down with one arm, he catches them on the other arm and carries them along until he has an armload. Then he carries the stalks to where other armloads have been set up in a shock. When the shock is as large as the

man wants it to be, he ties a string around it at the top so it will not fall down.

When rain comes, it runs down the sloping sides of the shock. As most of the ears are inside of the shock, they do not get wet. The corn is left in the shock until the farmer is ready to feed it to his farm animals. On many large farms, corn that is to be shocked is cut down by machines. The machines are pulled by horses or by tractors.

Corn that is to be stored in a crib, or bin, is usually husked from the stalks as they stand in the field. Husking is not begun until the stalks and leaves are dry and dead. By that time the ears are hard and dry, too. The corn is then ripe.

In husking or picking corn by hand from the stalks, a man usually walks along between the two rows that he is husking. At his side a wagon is pulled slowly along so as to be near him all the time. With strong hands he quickly pulls the husks from each ear, breaks it loose from its stem, and tosses it into the wagon. A good husker works rapidly. Almost never does he look to see where he is throwing an ear. He just knows how to make them go to the right place. Ear after ear goes flying through the air, and in a few hours

the wagon is filled. Then the load of corn is hauled to the crib and shoveled into it.

A farmer may begin to husk his corn as soon as it is ripe. He may go on husking corn all the rest of the fall, and even into the winter.

Some machines have been invented for picking corn and some of them are used on the larger corn farms. Of course they can pick much faster than a man can. But on the small farms and even on many of the large farms most corn is husked by hand.

*The Story Book of Foods from the Field* is full of gay colored pictures, and the stories in it tell about wheat, corn, rice, and the different kinds of sugar.

It is written by Maud and Miska Petersham. They have also written another book, *The Story Book of Things We Use*, which has stories and pictures about other foods.

## Corn Crops in Other Times and Other Lands

THE Indians were raising corn when the Pilgrims came to our country. They had been doing it for many hundred years before that. But they did not have cornfields that looked as ours do, even on our small farms.

### *How the Indians Planted Corn*

The Indians planted their corn without cutting down the trees on the land, and without plowing. They cut a strip of bark all the way around each tree where they were going to plant the corn. This killed the trees, and no more leaves grew on them. This kept the ground from being too shady. It let the sunshine through.

With pointed sticks, the Indians made a few scratches in the earth and dropped in the seeds. The corn grew without anyone taking care of it, but the boys made whistles and hung them on poles. The wind blew through them, and frightened away birds and mice.

At harvest time, the Indians just picked the ears from the stalks and prepared them for cooking and eating.

When the Pilgrims came, the Indians showed them how to plant corn. "When the leaves of the oak tree are as big as a mouse's ear," they said, "plant the kernels. Put four kernels into the earth. Put a small fish in between them. Round the soil into a little hill."

The Pilgrims planted many little hills of corn, with four kernels in each. The fish helped to make the soil rich, and this made the corn grow better.

Between the hills of corn, the Pilgrims planted the beans which the Indians gave them. Corn grows tall and has strong stalks. When the bean vines began to grow, they climbed up on the cornstalks. This made it easier to pick the beans than it would have been if the vines had been left lying on the ground.

### *Corn in Other Countries*

Probably the first people in the world who raised corn lived in Mexico. Some of them had tiny gardens on rafts floating on the rivers. These rafts were the only homes they had. The people lived in a little hut, and on the rest of the raft

they spread enough earth to make a small corn patch.

Columbus found the Indians in the West Indies raising corn. When he went back to Spain, he took some kernels with him. It was the first corn ever seen in Europe. After the voyage of Columbus, people in other countries learned about corn. Corn is now raised almost everywhere in the world.



In Mexico one kind grows only about eighteen inches high. It has a good name, "Golden Thumb."

In Africa some of the natives call their corn "mealies." The women do all the planting, harvesting, and cooking. Sometimes they wrap the corn in big leaves and roast it.



Some of the Arabs, who live in oases in the deserts of Arabia, grow corn. They like to boil it in water. Then they dry it and boil it again in butter or oil.



In some of the lands, east of the Mediterranean Sea, the people often have nothing but hot corn on the cob for dinner. They are so fond of it that they almost always keep a copper bowl filled with corn standing in front of the door of their house. Anyone who is hungry can help himself.

## Rice, the Great Cereal of China and Japan

**M**OST American children like rice pudding with raisins in it. Do you? There are other foods made of rice that boys and girls like, too. Some of them are rice crispies, puffed rice candy, steamed rice with butter, or rice custard with maple syrup. Do you know any other?

The boys and girls of China, Japan, and India would tell us that they like rice better than anything made of wheat or corn.

The whole world's crop of rice is bigger than the crop of wheat and bigger than the crop of corn.

Let us find out something about how this huge crop is grown. It is not done in exactly the same way everywhere, but wherever we go we shall see something different from what we saw in the wheatfields and the cornfields at home.

### *A Visit to a Ricefield*

If we visit a ricefield in the southern part of China, we shall think it looks like a swamp. Before the seeds are sowed, and also while the

plants are growing, the ground is kept covered with water two inches deep. Even the plowing is done while the fields are flooded.

Some of the water comes from the heavy rains, which seem to pour down in sheets. Some of it is pumped out of the canals.

Most of the ricefields are close to a river or a canal. In the parts of China where rice is raised, there are thousands of canals crossing the land in every direction. Wherever we go, we cannot walk a mile without seeing three or four of them.

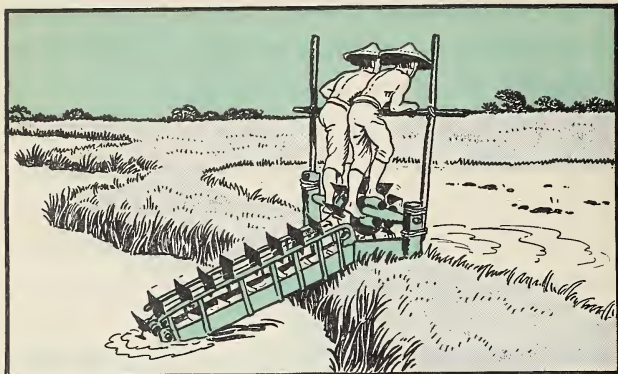
### *How They Raise Rice*

At the beginning of the planting season, the farmer gets his long water trough ready. He paints it in bright colors. When the paint is dry, he puts one end of the trough into the canal or river and the other end into his field. Then the pumping starts.

Men and boys spend many days turning a water wheel like the one in the picture. It lifts water from the canal and sends it through the trough. Sometimes an ox works a treadmill with buckets fastened to it.

If a field is too far from the canal for the trough to reach, a well is dug near it. Then we see a line of men carrying buckets on their shoulders and

emptying water into the field. They have to work night and day, except when it rains, until the rice begins to ripen.



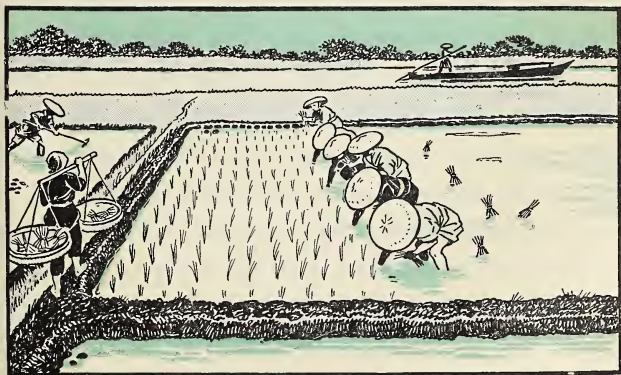
When the ground is soaked, it is ready to plow. Some farmers use machines to plow the land and some have small wooden plows pulled by water buffaloes.

Sometimes birds perch on the backs of the buffaloes and catch the flies and bugs that are always swarming around them. The man who guides the plow has to walk in mud up to his ankles, so he covers his legs with straw to keep the insects from biting him.

There is a good story called *One Day with Jambi in Sumatra*. It is by Armstrong Sperry. Among other things it tells about plowing a rice-field with a water buffalo.



After the mud has been stirred up, the farmer plants his rice. First he scatters seeds in one corner of the field. He waits for them to grow. When they come up, they look like grass growing in the water. You know why this is, don't you?



In about a month, the little rice plants are six or seven inches high. It is now time to do what is called transplanting. The farmer has many helpers. They pull the young rice plants up by the roots, a bunch at a time, but set them one by one in long, straight rows through the whole field.

Everywhere we see men with bowl-shaped hats made of rice straw, and women with their heads wrapped in blue cotton cloth, to shield them from the hot sun. They go trotting around barefooted in the mud. Boys and girls do their share in the work by bringing more bunches of plants as fast as they are needed.

Rice grows very fast, often as much as six inches a day. Usually the Chinese can plant and harvest rice twice in a season. In good years there have been as many as five crops.

While rice is growing, the field has to be hoed or raked to kill the weeds. Sometimes the workers use tools much like ours. Sometimes they just rake the mud with their bare toes. But in spite of this, some weeds do grow. We see many men and women hard at work pulling weeds.

The rows of rice plants run across the field from side to side, and also from end to end, making a giant's checkerboard. Young rice is



bright green. It makes a pretty picture, with the smooth pools of water between the rows shining like mirrors.

Around the edges of the field, the earth is hoed up to make a little path that is wide enough for you to walk on. Often grass and wild flowers grow on the top. These little raised paths keep the water from running out of the fields. They also show where one farmer's land ends and another's begins.

Short distances apart, along the edges of the field, are strong bamboo posts with tiny straw houses on top. In these houses sit the boys who watch for birds and animals that might eat the young plants. Often water birds with long legs go walking around as if they were hunting for fish in a lake.

From the little houses, many ropes reach across the fields with scarecrows hanging from them. When the boys pull the ropes, the scarecrows jump up and down.

In some places we see boys running through the fields to drive away flocks of birds. The boys have long poles like whips, with whistles at the end on a long string. When the boys move the poles quickly through the air, the wind blows the whistles and the birds are scared away.



By and by the rice turns from bright green to golden-yellow. Then it is time to drain off the water. The fields must be dry while the grain is ripening. The water is drained off through big bamboo pipes.

### *Harvesting Rice*

When the heads are full of grain and the rice is ripe, the plants are about five feet tall. In some places the rice is harvested with machines, and in other places it is cut down by men and women who use sharp curved knives.

The rice plants are tied into bundles as our farmers tie wheat. The bundles are piled into carts or upon the backs of oxen, and are carried from the fields to the farmyards. They are hung on fences to dry.

## *Threshing Rice*

After a while it is time to thresh. Some farmers have machines to do the threshing and some do it in interesting old-fashioned ways.

Men and women use heavy wooden beaters to pound the grains of rice from the stems. In some places people comb out the grain by pulling a handful of stalks through a thing that looks like a huge rake, with long, thin iron teeth.



In other places, the rice is spread on the ground. Four or five oxen trample out the grain by walking round and round a post to which they are tied. They are blindfolded so as not to get dizzy.

In still other places, a farmer uses the same

kind of machine that his great-grandfather used. It is a log standing on end, with the top hollowed out to hold the rice. There is a seesaw fixed so that a heavy block of wood at one end will go down inside the log and strike the rice.

To work it, a boy gets on the other end of the seesaw. Up goes the pounder, and off jumps the boy. Bang! down drops the pounder upon the rice.

### *Husking Rice*

When rice grains come out of the head, they are covered with tight little skins or husks that have to be taken off. These skins stick and are hard to get off. For this work, some farmers have machines that take off the husks and polish the rice kernels until they shine almost like silver. Some of the farmers have to do the husking by hand. Their rice is not polished like the rice that comes out of the machine.

This is the way they do husking by hand: The women use a block of wood or stone, hollowed out to make a big bowl. They pour the rice into this, and press down upon it with a heavy wooden club which they turn round and round. After a lot of turning, the husks are broken from the rice.

The women pour the grain into shallow baskets and toss it into the air again and again, until the wind blows the pieces of husk away. The grains are heavy and drop back into the basket. This is called winnowing.

### *How the Chinese Eat Rice*

After the rice is ready, the Chinese people like to eat it. They enjoy it whether it is rough or smooth. They eat it boiled with vegetables or spices or fish or meat. They make crisp cakes from the rice flour, too.

Perhaps the next time you eat a dish of rice pudding, you may think of the ricefields in China. You may remember the boys who sit in the tiny houses above the fields watching their precious grain. And you may laugh as you think of them shaking the scarecrows that drive away the birds.

The boys in China, on New Year's Day, pop rice as we pop corn. It tastes much the same. One famous Chinese pudding is made of rice with eight different kinds of fruit mixed in it. Does this make you think of the fruit cake we often have at Christmas time?

### *The Importance of Rice*

On one of the islands near China, the people believe that there is a goddess who can bring

good harvests. They set up little temples in their fields and put presents in them. These presents may be eggs, fruit, or a dish of cooked rice.

In China, the god of good luck is a jolly little fat man, sitting on a big bag of rice. Perhaps you have seen little images of him.

The rice crop in China was very important even as long as 5000 years ago. It was so important that the emperor and the princes used to do the first planting each year. They used to plant a handful of seeds with their own hands.

Most of the people in China, Japan, and India would find it impossible to get along without rice. They depend upon it more than we depend upon bread or any other single food. We do not raise as much rice as they do.

In our country, rice does not grow where wheat and corn do. Perhaps you can think of the reasons.

Our biggest crops grow in Louisiana, Arkansas, and Texas. These three States are on the Gulf of Mexico. California raises a good crop, and so does Missouri, but these are the only parts of our country where rice grows.

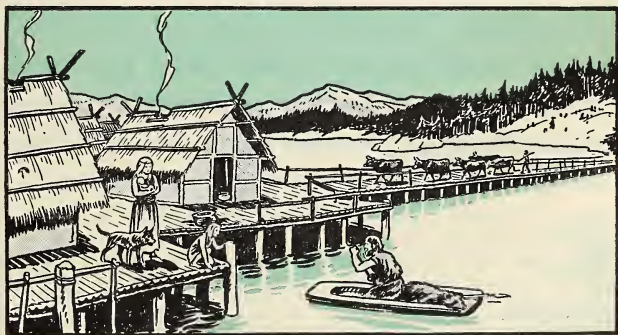


## Four Other Grasses

THIS will be a short story about four other grasses. They are oats, rye, barley, and millet. These crops are more important in other lands than they are in our own. Americans do not make flour from these cereals as much as other people do.

### *Oats*

When you hear the word "oats," you probably think of hot oatmeal, or of some cereal that you eat at breakfast. Perhaps you think also of oatmeal bread and oatmeal cookies. Perhaps you remember that some farmer has told you that oats are good food for horses and other animals.



Oats grow best where the climate is cool and damp. They are the most important grain crop in Ireland and Scotland, where the weather is just right for them.

The largest crops in the whole world are raised in Russia. The United States comes second, and then come Germany, Canada, and France.

The first people who ever raised oats probably lived in the central part of Europe, where Switzerland is now. It was many thousand years ago. They were the lake-dwellers about whom we told you in the story about apples.

From their huts, they built bridges to the shores of the lake. Over these bridges, the children drove cows and goats to pasture in the morning and home again at night. Near the pastures were fruit trees and small fields of vegetables.

We cannot be sure of all the kinds of food the lake-dwellers had, but we know that they had oats and barley. Not so very many years ago, some men found at the bottom of a lake all that was left of some of these huts. In clay pots there were a few grains of oats, and a few of barley.

### *Rye*

Do you like sandwiches made with rye bread? If you lived in the northern part of Europe, they

might be the only kind you ever had. Rye grows there better than any other grain. That is why so much of the flour is made from rye.

Rye does not need rich soil, as wheat and corn do. A great deal of the soil in the northern part of Europe is sandy and full of stones, so many of the farmers plant rye. Russia, Germany, and Poland raise the largest crops.

### *Barley*

Perhaps you sometimes have soup with little grains of barley in it. Americans eat barley in this way oftener than in any other. They use some barley to make the malt that helps to make chocolate malted milk taste so good.

At Christmas time, children often have candy toys in the shape of automobiles, boats, and animals. They are made from barley sugar.

In some parts of the world, many of the poorest people use barley flour to make bread. This bread is dark and heavy, but it is cheap. Many, many years ago it was the chief food for soldiers.

Russia, China, Japan, and India are some of the countries where the biggest barley crops grow. A great many poor people live in those countries.

Like oats, barley was one of the first grains

which men learned to raise. It was used in China and Egypt more than 4000 years ago.

### *Millet*

Have you ever heard of a grain named millet?

Americans raise it mostly for hay and for feeding the seeds to chickens, ducks, and other kinds of poultry. But in India, China, and Japan the seeds are ground up and made into bread by people who are too poor to buy rice.

Millet grows wild in some parts of Africa. Many of the natives make coarse flour from the seeds.

You remember reading about rice, and what an important food it is to so many men and women and boys and girls. Some people think that the number who eat millet is larger than the number who eat rice. They think also that perhaps millet was the very first grass seed anybody in the world tasted to see if it was good to eat.

## How Our Bread is Made

IF YOU were asked to name one food that you eat every day right through the year, you would be almost sure to say "bread." If children in almost any other part of the world were asked this question, they also would say "bread." Grown-up people almost everywhere eat bread every day, too.

There are only about three kinds of people in the whole world who do not raise cereal plants and make flour from the seeds. But they make something they call bread.

First, there are the Eskimos in the cold lands of snow and ice near the North Pole. They live mostly on the fish and seals they catch, and the birds and animals they shoot.

It is too cold for them to raise cereal plants. The only bread they have is made from moss which they pound up and make into powder. They use this for flour.

Next, there are the people who live in the hot rainy lands in some parts of South America and Africa. They are hunters, like the Eskimos.

They also dig up the roots of bushes and trees, and they pick wild berries and fruits.

The lands where they live are covered with thick forests, and are called jungles. The people clear a little of the land and plant small vegetable gardens. They cannot clear enough land to have fields of cereal plants.

You read in another part of this book how these people make a kind of bread from the roots of the manioc plant, after they pound it into meal, or coarse flour.

The third kind of people who do not raise cereals are the wandering herdsmen of Arabia. Their homes are tents instead of houses. They keep moving their homes. They do not stay long enough in one place to raise any plants. Their food is mostly dates, which they get from the palm trees, and milk from their camels or goats. Once in a while these people buy a little bread in oases, or from caravans traveling across the desert.

### *Different Kinds of Bread*

People in different parts of the world have different kinds of bread. We should certainly be surprised to see the tough little flat cakes that the people in strange, faraway islands call bread.



They are not the least bit like the large, light loaves that we have. But the people who eat them probably think they are delicious.

We should be surprised also to see the special shapes and sizes of bread in different countries in Europe. There seems to be a different kind of bread in each country.

What is your favorite bread? Is it white bread, or whole-wheat bread, or rye bread, or oatmeal bread, or some other kind? Perhaps you think crusty white rolls, or crumbly corn muffins are the best.

Perhaps, when you have a chance to choose, you take bread that has nuts or raisins in it. Do you sometimes have Boston brown bread? This was first made in Massachusetts where the Pilgrims and other settlers used to live.

### *What Bread is Made of*

If you have watched your mother making bread, you can probably name some of the things she uses. You have watched her measure the flour, the salt, the sugar, the milk, the water, and the lard. You have seen what the yeast does. It always seems like magic when the yeast makes the dough puff and swell until it is a big loaf.

The baker makes bread with the same things

that your mother uses. But, of course, he uses more of each than your mother does.



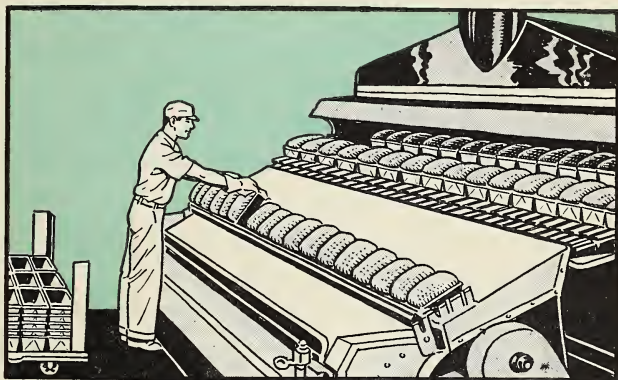
The most important thing that goes into bread is the flour. And you know that flour is the ground-up seeds of plants that we call grains or cereals. You know, too, that the most important cereals are wheat, corn, oats, barley, rye, and rice.

All of these cereal plants grow in our own country and in other countries. Do you remember that these cereal plants are grasses? Do you remember that the men who make flour have to get the seeds or grains from these grasses?

Most of the bread we eat is white bread, so most of the flour is wheat flour. But you know that other kinds of flour are used in bread. The best rye bread has wheat flour and rye flour in it. The best barley bread has wheat flour and barley flour in it. And so with other kinds of bread, there is usually some wheat flour mixed with it.

## *Baker's Bread*

Many people now buy most of their bread. They buy it at the store or the bakery. The bread that is sold in the stores is made at a factory called a bakery.



The bakers make many different kinds of bread from the different kinds of flour. But, because more people eat white bread made from wheat flour, the bakers make more of this kind. They make three kinds of wheat bread, whole-wheat, cracked-wheat, and white bread.

When the baker is going to make white bread from wheat flour, he mixes flour and water together. He adds salt and sugar, milk, lard, and yeast. This mixture is called dough. It is put into a big tank where machinery with clean shiny

arms stirs it thoroughly. The dough is then set aside for a little while. The yeast makes it swell and puff out.

When the dough is ready, another machine cuts it into small pieces for the loaves. A third machine shapes it into loaves. Each loaf is big enough to fill a baking pan about half full. Then it is left once more to puff and swell out.

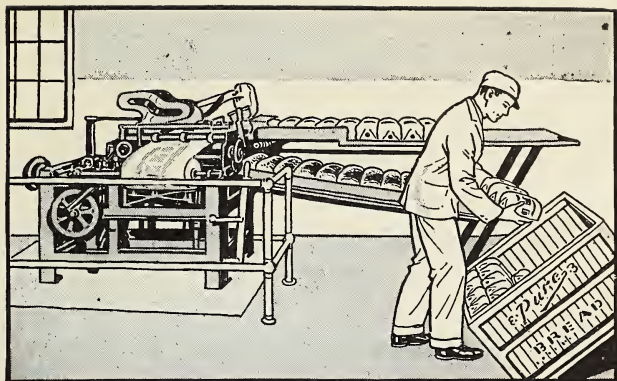
Soon the dough is ready to be baked. It is put into a huge oven that holds three hundred or even five hundred pans of dough. Some of the ovens are built of metal and some are built of brick. They have thick walls.

While the dough is baking in the oven, it swells still more until it fills the pan. A nice brown crust comes on the outside of each loaf.

After the bread has been baked about an hour, it is taken out of the oven and put to cool for two hours. Then it is wrapped in waxed paper with a label that tells what kind of bread it is. The next picture shows a wrapping machine.

As soon as the loaves are wrapped, they are sent to the stores, or to the homes of the people who have ordered bread. The baker's delivery trucks carry them.

Much of the work in a bakery is done by machines, but many people work in the bakery, too.



These people are very clean and neat. They dress in white clothes which are fresh and clean. Many of them wear long aprons, white cloth hats with wide flat tops, and cotton gloves. They never touch the dough with their bare hands. The whole bakery is spotless. The machines are so clean that they shine.

Other kinds of bread are made in much the same way as white bread. Some bakers make muffins and rolls, or cakes, pies, cookies, and crackers. You would be interested to visit a bakery and see how the work is done.

## Other Peoples' Bread

YOU know where Mexico is, don't you? In Mexico, many of the people on the farms and in the villages eat bread that is made from corn. Their corn bread is very different from ours. They grind the kernels of corn into small pieces and mix them with water. They spread this mixture in thin sheets on a flat stone. The women pat it with their hands into small cakes about the size of a saucer.

The cakes are roasted on a piece of thin iron which is laid over a coal fire. Usually the cakes are not allowed to get brown and crisp, because the people of Mexico like soft cakes better.

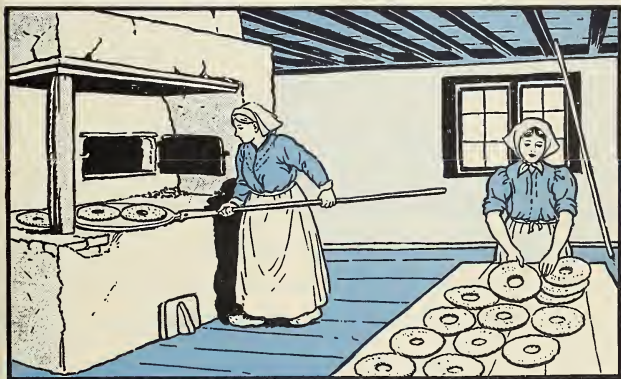




These cakes are called tortillas. Americans do not like to eat the tortillas until they have been roasted twice. Then they are crisp. The people of Mexico sometimes use the crisp tortillas as plates on which they serve food.

Norway is in the northern part of Europe. It is the country from which the Vikings came.

In some parts of Norway, away from the cities, the people do not eat bread made of wheat flour. They have a kind of rye bread that is dark colored and quite sour. It is baked in thin flat cakes.



These are round like a victrola record and about that size. They have a large hole in the center, and the women string them on thin poles like our fishing poles. They lay these poles across the rafters or logs that hold up the roofs of their cottages.

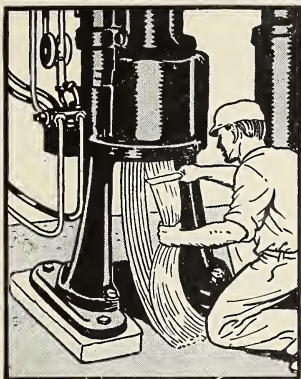
The women of Norway bake this bread only three or four times a year. Of course, they bake a great many cakes at a time. The people do not eat it until it is several days old. Then the bread is so dry and hard that we should hardly be able to bite it. When a woman needs bread for her family, she goes to a pole and slips off from one end of it as many cakes as are needed.

Sweden is the country close beside Norway. In Sweden, some of the bread is made in cakes about three feet across. It is about as thick as cardboard. This bread never gets stiff because it is made with a special kind of sour milk. It can be folded like a napkin and is kept in the drawers of the kitchen cupboard until it is eaten.

In Italy, the people raise wheat. They make some of it into bread, but they also use the flour to make macaroni and spaghetti. Perhaps you have thought that these two things could be picked from a plant, like vegetables. Some children do think so.

When the Italians wish to make macaroni or spaghetti, they first make dough. Then they put the dough into a tub with holes in the bottom. A tube is fastened to each hole and the dough is pushed through these tubes. It comes out in long strings. If the string is solid, it is called

spaghetti. If it is thicker and has a hole through the center, it is called macaroni.



The strings of macaroni and spaghetti are laid over wooden frames to dry. Sometimes there are so many of these white strings hanging side by side that they look like white sheets.

Macaroni is a favorite food in China, too. But there it is made from rice flour instead of wheat flour. The people who make it stretch the dough out into strings almost until it breaks. Then they hang it up to dry between two poles set into the ground.

In Russia and in Germany, the people eat much black bread. It is sometimes made of rye flour, and sometimes of barley flour. Have you read Grimms' fairy tales? The children in these stories often have black bread for supper.

Our bakeshops sell a dark-colored bread, which is much like this. It is made of rye flour and is called pumpernickel. Have you ever had any with your soup? It makes very good sandwiches, too.

The people in Germany make a great deal of delicious white bread, too. The white bread, white rolls, coffee cakes, and other rolls and cakes in the windows of the German bakeshops look very, very good and they taste good, too.

If you were to visit a bakeshop in France and could smell the loaves of French bread as they come out of the oven, you would surely wish to buy some.

Some American bakers make French bread. It is very good. Perhaps, as a special treat, your mother sometimes buys a loaf of French bread. It comes in loaves longer than your arm and about half as thick as a loaf of our bread. It has pointed ends and a very crisp crust. It is called French bread because it is the kind the people of France usually make. They are very fond of it, and they eat a great deal of it. It is white bread.

In France, the bread is not wrapped in waxed paper as it is in our country. The windows of the bakeshops are piled high with unwrapped

bread. The boys and the girls go to the bake-shop to buy it. They carry it home under their arms without any wrapping at all.

Sometimes the mother goes to the bakeshop. She carries the baby in one arm and the long sticks of bread in the other arm. You might even see a man with a little squealing pig in one arm and a long stick of bread in the other arm.

You often see small carts loaded with these long loaves of unwrapped bread being driven through the streets.

If you wish to read a funny story about a "poppy-seed strudel," which is a very good tasting cake made by the people of Hungary, find a copy of *Miki*, by Maud and Miska Petersham.

Another interesting story about *Poppy-Seed Cakes* is a book by that name written by Margery Clark. This story tells us many things we like to know about food in a faraway land.

## Bread in the Days of Long Ago

**M**EN who have studied history tell us that the first wheat bread there ever was in the world was made in Egypt 5000 or more years ago.

It could not have been at all like ours, because the people had no machinery to make the fine, velvety flour that we have. Several thousand years ago, the people of China, also, knew how to make bread. No one can be sure exactly how bread was made in these ancient times.

Is it not interesting to think that, so very long ago, people ate something that they called bread?

The American Indians were bread-makers. They pounded their corn into powder and mixed it with water. They cooked it on stones that had been heated very hot in the fire. Sometimes they baked it by burying it in the ashes of a fire. This must have made bread that was full of ashes and burned pieces of wood.

The Indians made another kind of bread from acorns which grew on the oak trees in the forests. They soaked the acorns in water or buried them in the ground. They did this to take away the bitter taste.



Then they dried the acorns and ground them into fine bits by pounding them between stones. Last of all they made dough and cooked acorn bread just as they did corn bread.

The Pilgrims and the other people who came from Europe and settled in America made their corn bread, at first, in the same way as the Indians did. Later they used ovens for baking it.

Their best ovens were built of brick. Usually the oven was built into the chimney, close beside the fireplace, and had an iron door. Perhaps some day you may see one of them in some very old house.

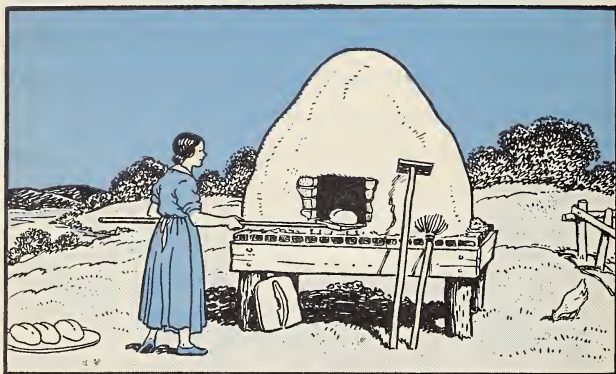
The people used to fill these ovens with wood which they set on fire. When the oven had become very hot, the burned logs and the ashes were raked out. The loaves were put into the oven and the door was shut tight. The bread baked.

Ovens like these are still in use in parts of the world where the people do not have much coal to burn in their stoves. Often their ovens are built out-of-doors. In Canada there are many people who live on small farms where the houses are very old. Many of them are far from any city.

In the farmer's dooryard you sometimes see an oven built of stones and thickly coated with

clay. It is shaped like a haystack and sometimes is taller than a man.

When the women bake bread, they build a hot fire in the oven and by and by rake it out, just as the Pilgrims did. Usually they bake enough bread to last their families about two weeks. The Indians in Arizona cook bread in this same kind of oven.



In some foreign lands, people dig a pit in the ground instead of building an oven. They heat the pit with burning logs. After the fire has died down, they clean it out as well as they can. Then they stick their dough on the hot sides of the pit. When the bread is baked, it is picked off with a pointed iron rod.

In the southern part of our country, many years

ago, the Negroes had their own way of making corn bread. They made a mixture of corn meal, water or milk, and salt. They stuck this on a board or on the blade of a hoe. Then they stood the board or the hoe on edge and placed it close to an open fire. In this way they toasted the dough until it was baked. You can see why hoe cake, as this bread was called, is a good name for it.

Some corn bread is called johnnycake. People sometimes say that at first the name was journey cake. The reason, they think, is that when travelers went on a journey, they took a supply of this bread to eat on the way. Journey and johnny do sound a little alike, don't they?

# *Foods We Get from Animals*

**M**UCH of our food comes from animals. First, there is milk and cream. Then there are butter and cheese, which are made from milk or cream. There are also many kinds of meat and fish, and there are eggs.

The stories that come next tell about these foods, about the cows that are milked in our own country, and about the strange animals that are milked in other parts of the world.

From some of the stories in this group, we shall learn about the beef cattle, the sheep, and the hogs from which Americans, and other people, too, get meat. Others tell about hens, and about other kinds of poultry.

Last of all, there are stories about fishing in our own country and in far-away lands and olden times.



## Milk and Cream

IF YOU live in a city, perhaps some mornings when you waken very early, the first sound you hear is the milkman's wagon coming nearer and nearer. The sky is just getting light. The city has not yet begun to wake up.

Sometimes the milkman drives an automobile truck, but in most cities and towns he drives a horse and wagon. The newest wagons have big rubber tires like an automobile, so you hear only the horse's hoofs clicking on the pavement. What kind of wagon does your milkman drive?

In front of your house, the driver calls "Whoa!" and the wagon stops. The driver comes to your doorstep with his bottles jingling. He leaves some of them. Then he hurries back to the wagon and away he goes to the other houses.

You say to yourself, "I'm glad I don't have to get up as early as the milkman does," and off to sleep again you go.

Sometimes the milkman begins his work at two or three o'clock in the morning. First he has to get his wagonload of bottles of milk. Then he drives to many houses to deliver them, so that

boys and girls and their fathers and mothers can have milk and cream with their breakfast cereals.

He has to do this in pleasant weather and he has to do it when it rains and snows. He has to deliver the milk when the weather is hot and when it is freezing cold.

### *Where the Milkman Gets His Milk*

Do you ever think about the place where the milkman gets the milk that he carries around in his wagon or his truck?

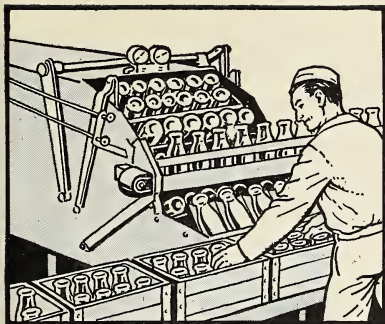
In the city, he usually gets it from a building known as a creamery or a bottling plant. The milk has been brought to this creamery or bottling plant by trucks and trains.

You would like to watch the bottling of the milk at the bottling plant. A long line of sparkling clean bottles are constantly moving to a big white filling machine that works like a merry-go-round. As each bottle moves up close to a spout, it is filled to the top.

Next it moves on to another machine where a clean paper cap is fitted on so tightly that it cannot come off.

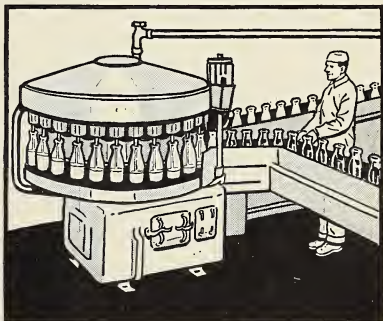
Then it goes into a case or box that holds many milk bottles. The milkman loads these cases of bottles into his truck, or wagon.





*In a bottling plant, nearly all of the work is done by machinery. This is one of the bottle-washing machines.*

*This machine fills the bottles with milk, and sends them along to another machine that puts on the caps.*



*Last of all, another clever machine fits on an air-tight paper cap. No dirt can get into the bottles.*

The bottles sparkle in the bottling plant because they have been washed so well. Each one is washed nine times before it is ready for the milk.

The bottles are washed in a big machine. They are washed in boiling hot water, but they are cooled before they are ready for the milk. The bottle-washing machine is an important part of the bottling plant.

The milk comes to the creamery from the farms or dairies in the country. Some of these dairy farms may be near your home and some may be several hundred miles away. Then the milk travels in huge glass-lined tanks on automobile trucks, or in refrigerator railroad cars.

The tanks keep the milk cool in the same way that thermos bottles do. The cars have spaces filled with ice. You may have seen trucks of this kind carrying milk, or you may have seen milk-tank cars on railroads. Sometimes they are a part of an express train. These cars keep the milk cool and fresh.

Most of the milk trains travel at night and get to the filling or bottling plants early in the morning. They run fast from places far out in the country. Milk must be delivered in the city before it is a day old. If it is older than that, it is not so good as food.

## *Cream*

You may have noticed that your bottles of milk look pure white at the bottom, and creamy yellow at the top. The white part is mostly water. The creamy part at the top is made up of tiny balls of fat so small that you cannot see each separate one.

These little balls of fat are lighter than the watery part of the milk, so they float to the top. They make what we call cream.

The farmers have machines that separate the cream from the rest of the milk. They sell the cream to the dairies or to the stores. We can get it from the milkman or from the stores.

We like cream on cereals, on some fruits, and we like it made into ice cream. We like whipped cream on our custard and on many other desserts.

## *A Dairy Farm*

Have you ever visited a dairy farm? It is the name for a farm that produces milk. When you are driving in the country you can be sure that you are near a dairy farm when you see many cows grazing in sunny, grassy pastures, or drinking from a brook, or lying in the shade of a tree. It always makes a pretty picture.

In the winter, of course, the cows live in a clean, comfortable barn. For food they have sweet hay, juicy cornstalks, and several kinds of grain.

The buildings on a well-kept dairy farm are just as clean, outside and inside, as a house. They have many windows to let in air and sunlight. Each window has a screen. The floors are made of cement and are always scrubbed clean. The walls are kept white and clean.

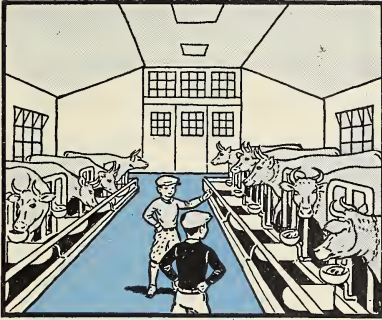
In the barn, each cow has a separate pen, or stall. The stalls are in long rows. Each stall is separated from the others by iron railings which are kept very clean.

The stalls have enough room for the cow to lie down comfortably. The floor of the stall is washed every day. Then it is covered with new wood shavings or clean straw.

Doctors examine the cows often to make sure that they are well. And once in a while each cow has her hair cut with clippers.

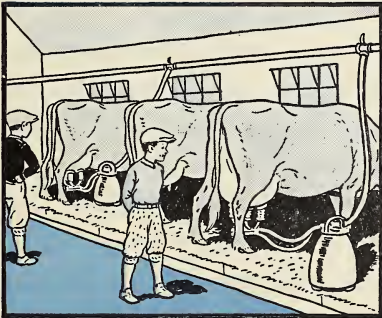
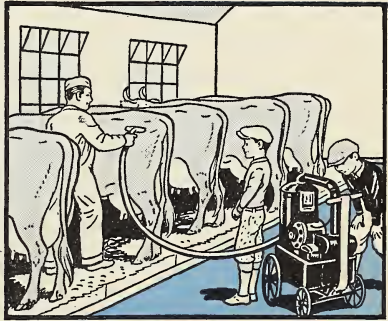
Milking time comes twice a day, once in the morning and once in the evening. The cows are brought into the barn from the fields for the milking.

Every cow is given a bath and then is brushed. Some dairy farms use a vacuum cleaner to clean the cows. It is something like the one your mother uses to clean her rugs.



*The cows are kept in a light, clean, airy barn. Each cow has a place for her food and a drinking fountain.*

*Electricity runs the vacuum cleaners that keep the cows' coats so sleek and shiny.*



*Electric milking machines suck the milk from the cows and send it through rubber tubes into spotless cans or pails.*



When the cow is clean, she is led into her stall and her head is tied. Then the milkers begin their work. These men wear spotless white uniforms, and if the milking is to be done by hand, they must have their hands as clean as they can be.

The milk goes streaming down into pails that shine like silver. It makes a pleasant tinkling sound. Each pail has a cover over most of the top.

At many dairy farms, there are machines that milk cows just as well and as gently as any man could do it. The cows do not seem to mind being milked in this modern way. The milk runs through tubes into big cans, with covers. Sometimes big glass jars are used instead of cans.

The machines milk the cows much faster than the men can do it. Some of them milk two cows at a time and some milk four.

When the milking is finished, the milk is strained through very fine cloth into other cans or pails. Then it is cooled by standing them in cold water. It is warm when it comes from the cows and the cooling keeps it sweet.

*Jimmy the Groceryman*, by Jane Miller, and *Dean and Don at the Dairy*, by the same author, tell more stories about milk, and cream, and also about butter.



You can read about an old-fashioned dairy farm in E. Boyd Smith's *The Farm Book*, which has many colored pictures. And you can read about a new-fashioned farm in Henry B. Lent's *Grindstone Farm*.

### *Animals That Give Milk*

A boy who lived in a city wanted to know about the farm that his milk came from, so his father took him to a dairy farm. This is the kind of farm where many cows are kept. From their milk, butter and cheese are made.

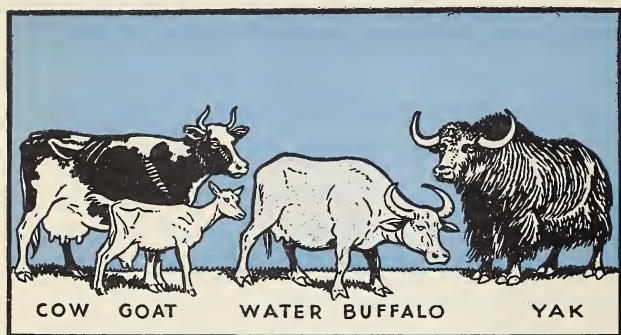
Until this boy went to see the dairy farm, he had supposed that all cows looked alike. He was surprised to find that dairy farmers often have four different breeds of cows.

He learned that the Guernsey cow is reddish-yellow, with white markings. He learned also that the Ayrshire cow is white, with brown or reddish spots, and that the Jersey cow is usually light brown, and has black shadings around her head. He found out that Holstein is the name of the cow that is black and white.

When this boy told one of his friends about the different kinds of cows, the friend said: "I am glad to know the name of the cow that is black and white. When I was in Holland, cows colored

that way were the only ones I saw.” What kind of cows do you see most often on the farms near your home?

In some parts of Europe, the cows are milked in the fields. The milk is carried home in big cans which are loaded into little carts drawn by donkeys.

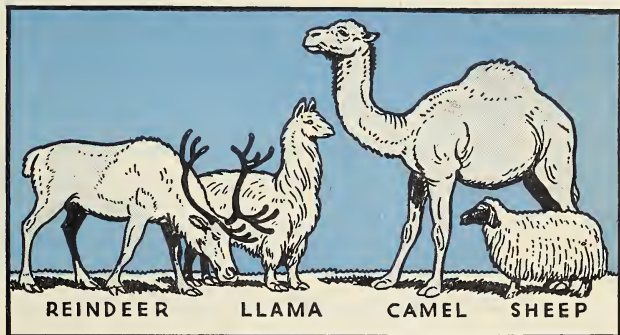


Cows are driven through the streets in some of the cities in South America. They are milked in front of the houses where anyone wishes to buy milk.

There are some countries where many of the people depend upon goats for milk more than they depend upon cows. Mexico is one of these countries. If a family does not use all its goats' milk, the boys or men drive the animals through the streets of the town. If anyone wishes to

buy milk, the boy stops his goat in front of the house and milks her there.

In Italy, the people keep many goats. You often see large flocks of goats being driven home from the fields to be milked at night. Sometimes a flock of goats blocks the road and the automobiles have to go very slowly. Sometimes they



have to stop. There are so many goats in some flocks that they take most of the road.

In our own country, too, there are people who keep goats for their milk. They like to feed their babies on goat's milk. There are farmers who keep large flocks of goats. They sell the goat's milk just as they sell cow's milk. Hospitals often use goat's milk for some of their patients.

If you lived in some parts of China and Japan,

your family would give you very little milk. You would hardly ever have butter. The reason is that there is so little pasture land for any kind of animal that can be milked.

There are some parts of the world where the people have to use the milk of strange animals. In many towns in the Philippine Islands, if you wish to buy milk, you will have to wait until the peddler comes along. He carries milk from his water buffalo in jars upon the two ends of a pole balanced across one shoulder. He measures your milk in a piece of hollow bamboo.

Perhaps the strangest animal of all those that are milked is the yak. It is the most useful animal in Tibet, a part of China. The country is full of mountains, and is cold all the time. The yak is the beast of burden, and carries the heavy packs of the traders. Its hair is made into cloth, and the people eat yak meat.

Boys and girls drink yak milk, and their fathers and mothers make it into butter. The people of Tibet sometimes mix the butter with barley meal and make a sort of paste. Sometimes they make a thick soup by boiling butter, tea, and water together.

In cold countries like Lapland, near Norway and Sweden, the reindeer give milk which the

children like. These animals do not cost very much to keep because they can dig down through the snow and find moss to eat. They do not need barns for shelter.

Reindeer milk is one of the chief foods in Lapland. From it the people make cheese, which they like so much that they eat it at almost every meal.

The people among the mountains of Peru, the country in South America where potatoes first grew, milk the llama. When you say this word, it sounds like "yarma." This is an animal much like the sheep. It is also called "a little cousin of the camel."

The people eat meat from the llama, they weave cloth from its hair, and they pack things upon its back. The llama can travel in places where other animals cannot go, and it can live many days without water just as a camel can.

Parts of Arabia are sandy deserts. Some of the people are herdsmen. They wander about to find grassy spots in the oases where their sheep can graze. They have horses, but the most useful animal is the camel. Camels carry the tents in which these people live, and other loads of all sorts of things. For milk, the Arabians depend mostly upon their camels, but sometimes they get milk from their sheep and their goats.

The country where people depend almost wholly on sheep's milk is Persia, although sometimes they milk their goats, too. Persia is in Asia, not very far from Arabia, and most of the people are farmers and herdsmen.



## Butter and Cheese

**B**UTTER is made from cream that is a day or two old. It is easy to make. Have you ever whipped cream until it turned to butter? If the cream is thick and you whip it just a bit too long, it becomes full of lumps. If you keep on whipping, you will soon have butter instead of whipped cream.

There are other ways to make butter that are just as easy. You can put the cream in a bottle and shake it till the yellow lumps of butter appear.

Another way to make butter is to use a simple churn. You can make one yourself. First, get a milk bottle. The pint size will do. Make a small round hole in the paper cap. Next, get two thin flat sticks, about one and a half inches long, and fasten them together in the middle. They will form a tiny cross with four even arms. Then, get another stick about eight or nine inches long. It must be small enough to go through the hole you made in the cap of the bottle. Fasten one end of this long stick to the center of the tiny cross. This makes a dasher.

Be sure to have the dasher and the bottle thoroughly clean. Pour about half a pint of cream into the bottle and work your dasher up and down, quite fast.

After a while, little balls of yellow butter will begin to appear in the milk. As you keep on working the dasher up and down, more and more of these balls of butter appear. They begin to stick to each other, and form bigger lumps of butter which float in the milk and make it hard to work the dasher up and down.

You must keep on, though, until all the butter is separated from the milk. Then you can take a spoon and gently lift the big lumps of butter out and put them in a bowl. The milk which is left in the bottle is called buttermilk. Some children and grown-ups like to drink it.

Your butter is now almost ready to eat, but not quite. There is still some milk in it. The butter will not taste good or keep well unless you press all the milk out of it. Pour a little cold water on it and wash every bit of the milk out of it. You pat the butter with the side of a knife or with a wooden spoon, and work the cold water through it.

You will be surprised to see that the cold water begins to look a little milky. You can

pour this water off carefully and use fresh cold water until every bit of the milk is washed away. Then you pour off the water, and pat the butter very hard with your knife or spoon so that you squeeze out any little drops of water that may be left in it. Your butter is then firm and sweet and good. Mix a little salt with it, and it is ready to spread on your muffins or your sandwiches.

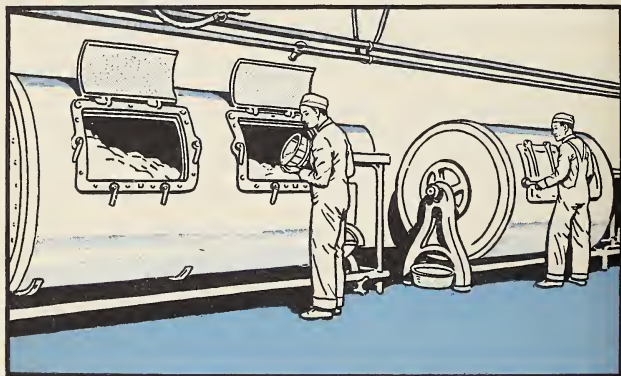
Some people make their butter and some buy it from the milkman or from the store. When people make their butter, they use a churn. It is much larger than the churn you can make from a milk bottle, but it works in the same way.

### *Old and New Ways to Make Butter*

In the long-ago days, families had to make their own butter. They used churns that were made of wood. Perhaps you have seen pictures of these old-fashioned churns. They were round, and they were big at one end and small at the other end. There was a long handle like a broomstick that ran through a hole in the cover. On the end of the handle was the dasher. It was hard work to churn the butter in such a big churn. Sometimes it took an hour or more.

The butter that your mother and other people

buy has probably been made in a creamery. When you visit a creamery, you see big round machines like steel barrels lying on their sides, in which the butter is made. They are the churns, and they work in just the same way as the milk-bottle churn. Inside these big churns are large paddles that spin around in the milk and dash it about.



At first they spin very fast. Then, as the butter begins to form, they go slower and slower. At last the butter is taken out and washed and salted. It is packed into tubs or cut into pieces to be sold in packages. The butter your mother buys from the store, or from the milkman, is wrapped in waxed paper and packed in a fancy cardboard box.

The pound package of butter is the kind sold almost everywhere in our country. Sometimes the pound of butter is in one piece. Sometimes it is in four pieces, each wrapped by itself. These small pieces are just the right size to be sliced into the square pats that look so nice on the table.

*The Story of Milk*, by Laura Zirbes and Marian J. Wesley, tells many things we like to know about butter as well as milk. This picture shows how they churn butter in Arabia.



### *Butter in Faraway Lands*

Some of the butter in Europe is made without salt. Some in our own country is made that

way, too. Hotels and lunch rooms serve both salted and unsalted butter.

We have talked about the ways in which butter is prepared for the stores in our country. In the countries of Europe there are stores, too. And there are also markets. These markets are out-of-doors, usually in a big open space around a big church. Sometimes the church is a beautiful cathedral.

People come from the country with their fresh butter and with many other things, and they set up large umbrellas to protect them from the hot sun or from the rain. They sit under the umbrellas all the day and sell the food they have brought from the country.

The markets are not open every day in the week. In one town there may be a market on Tuesday. In another town there may be one on Thursday. Whenever there is a market day, the people do all their buying and selling for the whole week.

In France, on market days, the women wrap their little rolls of butter in cloth and pack them in baskets filled with wheat straw to keep them from shaking around. Then they sell the butter in the market.

Denmark is one of the smallest countries in



Europe, but it is one of the world's most famous makers of butter. The farmers form a club and build factories. The clubs in different villages then join in sending their butter to other countries.

They pack the butter in tin cans that have been sealed so the air cannot get in. In this way the butter keeps fresh and good. The clubs send it to countries all over the world. Some of it comes to our country.

In India, where it is so hot that butter will not stay fresh very long, the people make butter every day. They make their butter by shaking milk in bottles. The people melt their butter because they like it better that way than solid, as we have ours.

In some faraway countries, butter is made from the milk of goats, camels, and the other animals we told you about in another story.

### *Cheese*

Do you like cheese sandwiches? Many children like them in their lunches. Maybe you have crackers and cheese sometimes, too.

Perhaps your mother sometimes makes cream cheese, or cottage cheese, at home. If your mother does not make cheese of these kinds, she

may buy it from the store or from the milkman. When it comes from the stores, it is wrapped in tinfoil to keep it fresh. Sometimes little bits of pineapple or small red peppers are put into the kinds you buy.

Another favorite cheese is called Cheddar, because it was first made in a town of that name in England. It is pinkish-yellow in color. American factories make almost ten times as much of this cheese as of any other.

Most kinds of cheese are made in factories from sweet milk in which a powder has been put to sour or curdle it. Some kinds come to us from lands across the ocean, and are made from the milk of goats or sheep.



Have you ever tasted the big round red cheeses, like large red balls, or the yellow pineapple-shaped ones, that come from Holland? On market days in Holland, there are gay piles of these cheeses for sale. They make bright spots of color in the markets. They are heaped up, too, along the sides of the canals waiting to be loaded upon the boats.

There is a pale yellow cheese which comes from Switzerland. It is full of holes the size of a penny. Many people like it. Have you tasted it?

Of course, you have sometimes had grated cheese on your macaroni or spaghetti. Some of this comes from Italy and some of it is made in our own country.

There is a strong-smelling cheese, with little green marks in it, that comes from France. Here is an interesting story of how this cheese was first made.

A shepherd boy was tending his flock of sheep among the mountains. He had brought a lunch of home-made cheese and barley bread. To keep it cool, he hid it in a cave. Some of his sheep wandered away. It began to rain and the boy had to run after his sheep and drive them home. He forgot his bread and cheese.

Several weeks later, the boy was passing the

cave and remembered the lunch he had left there. He found the barley bread covered with black mold, and not good to eat.

His cheese was covered with green mold, and at first he did not want to taste it. He was very hungry, though, so he took a bite. Much to his surprise, he found it better than any he had ever eaten.

The next time he took his sheep near that cave, he purposely left some more cheese there. Sure enough, two weeks later, he found that it had the same new taste.

For many years, this boy's friends put their cheese into this same cave. The air was moist in it because of a brook that ran through it. They kept their secret of how to make better cheese than anyone else, and became rich and famous from the large quantities they sold.

There are about 350 different kinds of cheese in the world. If you were to taste a new kind every day, it would be almost a year before you got to the end of the list.

Cheese is probably the first food that men ever learned to make. It is said that the very first cheese made itself. An Arab merchant was crossing a desert and stopped for a noonday lunch of dried dates and goat's milk. When he

tried to drink from his leather pouch, he found no milk at all, but something watery. He cut open the pouch and found inside a queer white mass and some liquid.

The jolting of his camel had changed the milk into a sort of cheese. The Arab thought it pleasant to eat, and for years afterward, when other Arabs wanted cheese, they made it in that same way.

## Ruth and Carl Visit a Cheese Factory

RUTH lives where there are many dairies. This is in the State of Wisconsin where there are wide green fields on which many fine cows graze. Wisconsin is our greatest cheese-making State. One factory makes more than twenty different kinds.

One day, Ruth and her brother Carl were driving with their father and mother. They were talking about cows and the foods that come from them. They thought of cream, butter, and cheese.

They had been to the dairy and they had seen how the milk is put into bottles, how the cream is taken from the milk and bottled, and how butter is made. But they had never seen how cheese is made. They did not know much about cheese except that it is made from milk.

Father said, "There is a cheese factory here in our own town. I will take you to see it. Then you will know about cheese, too."

A few days afterward, Father told Ruth and



Carl that he could take them to visit the cheese factory. They were delighted to go. Mother said that she would like to go, too.

The cheese factory was a big red-brick building. It was low, but it spread out over a good deal of ground.

First, Father took Ruth and Carl and Mother to the office where they asked if they might visit the factory. The manager was glad to have them visit, and he gave them a guide to help them see everything and to answer their questions.

First, the guide took Ruth and her family into the weighing room. There they saw men bringing large cans of milk into the factory. They had brought the cans on trucks. Can after can in a long line went up to the weighing machine.

After the milk had been weighed, it was put into large tanks in another room. Ruth and Carl had never seen so much milk before. The guide told them that, for some kinds of cheese, it took 2500 pounds of milk to make 200 pounds of cheese.

From the tanks the milk went through a rubber hose and then through strainers into large round tanks that were lined with copper. The copper was a reddish color and clean and bright. The milk was heated in these tanks. While it was

getting warm, men came with large cans of rennet and poured one into each tank. It looked like very yellow milk as it was being poured into the tanks.

Ruth and Carl asked about the rennet. The guide explained that the rennet for their cheese comes from Italy. It is in the form of a paste. At the factory it is made thinner by adding water to it so it can be poured into the milk.

When the rennet was poured in with the milk, men began to stir and stir. They had a large paddle and they stirred with it. It was hard work to stir because the rennet and the heat made the milk thicken. Then the liquid part, the "whey," separated from the solid part, the "curd." The curd is the part that is made into cheese.

At last there was a great deal of curd in the tank. Most of the whey was drained off. The men placed a large piece of cheesecloth under the curd, and lifted it out of the tank. The cheesecloth let some more of the whey run through it.

The men emptied the curd into a tub. Then they carried the tub to a table where there were many queer-looking round cans with little holes in the sides. Ruth and Carl wondered what they were for. Then they saw a man with a ladle

dipping the curd out of the tub. It looked soft and springy. Ruth said it looked something like bread dough.

One tub of curd filled twelve of these round cans. There was still some whey in the curd, so the filled cans were left to stand several hours. Little by little all the rest of the whey ran out through the holes in the sides of the cans. The curd sank to the bottom of the cans, and by that time it was real cheese. But it was not yet ready to sell. It had to stay in the factory, in what is called the curing room, until it had just the right taste.

Now, the guide took Ruth and the others into still another room. Here cheeses of another kind were soaking in salty water.

They had been pressed in big machines and were big and round like a drum. Each weighed sixty pounds. The guide told Ruth and Carl that the cheeses must soak in the salty water for three days.

Next, the guide took Ruth and Carl and Mother and Father into a room that had hundreds of shelves. On each shelf were as many cheeses as the shelf would hold. The guide told Ruth and Carl that the cheeses stay in this room for many months. Once in a while they are turned, and

rubbed with salt. At last they are painted on the outside with a special kind of paint to keep out the dust. Then they are ready to sell.



Now the guide led the way back to the office. On the way, the children stopped to watch the machines that cut some of the cheeses into small pieces. Some of the pieces were square, some were round, and some were triangles. There were other shapes, too. The machines wrapped them in tinfoil and pasted on the labels.

It had been noisy in the factory, but it was quieter in the office, so the children did not have to shout when they asked questions. They had many to ask.

Ruth asked how many different kinds of cheese were made in the factory. The guide said that

there were twenty-two kinds. Each was flavored in a special way.

Carl asked why so many of the men were talking a language that was not English. The guide told him that most of the cheese-makers in that factory are Italians. They have been brought from Italy to make the cheese. They learned in their own country just how to do it.



Ruth asked where the cheese goes from the factory. The guide answered that it is sent to stores all over our country.

Carl asked if all cheese is made as it was in that factory. The guide said that it is all made in much the same way, but that there are certain things which are different in making each kind of cheese.

After thanking the guide, Mother and Father and Ruth and Carl left the factory. They drove home in their car. That night they had spaghetti with Italian sauce and grated cheese on it. They wondered whether the cheese came from the factory they had visited that day.



## Beef Cattle and Cowboys

HAVE you ever been to a Wild West show, or a rodeo? Did you see some wonderful horseback riding by the cowboys? Can you tell why the cowboys have to be good riders?

If you are like most boys, you know that it is great fun to wear a cowboy suit and a cowboy hat. You like to sing cowboy songs and to play you are a cowboy. You probably like to read stories of the way cowboys live and of the adventures they have. Many girls play cowboy, too. They enjoy cowboy stories and songs almost as much as boys do.

If you like to read about cowboys, H. C. Holling's *The Book of Cowboys* has good stories and good pictures.

Cowboys are important to everyone in our country because of the work they do. They take care of most of the cattle that provide us with beef.

Beef cattle are called steers. They are larger and heavier than the dairy cows from which we get milk. Many beef cattle are raised on small

farms near our homes, wherever we live. But most of them are raised in the western part of our country.

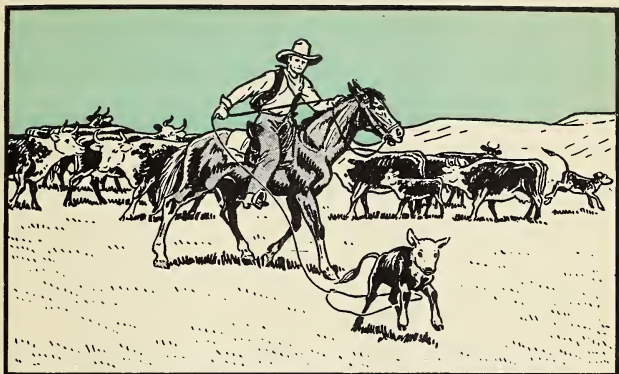
Just as there is a corn belt in our country, so there is a wide belt where the beef cattle live and where the cowboys do their work. In some parts of our country, from Montana in the North down into Texas in the South, there are grassy lands called prairies.

In these lands the soil is not rich. The soil is not good for farming or the growing of crops. But there is plenty of grass for the cattle to eat or to graze on. There is usually enough rain to make the grass grow.

This grassy land stretches from east to west across the corners of the States that have the great fields of wheat and of corn. The States that are famous for the great numbers of beef cattle they raise are Texas, Oklahoma, Kansas, Nebraska, Montana, Iowa, Minnesota, Wisconsin, and Illinois. We name Texas first because it has the most cattle of all. The other names are given in the order that makes it easy for you to find them on the map.

Every year, in the spring, or in the fall the cowboys have what they call round-up time. Round-up is the name for the time when the calves that

have been born are branded with their owner's marks. It is also the time for counting the owner's herds to see if any have been lost.



Usually, the owners of the cattle have their own separate ranges, which are enclosed with wire fences. But sometimes the fences get broken and the cattle stray away. Sometimes the cattle that belong to several different men graze together on land that belongs to the government. The herds get mixed.

The herds from all over the range are brought to one place. The range is the grassy land where the cattle graze. There are hundreds and hundreds of cattle. The calves come trotting along behind their mothers. Each cowboy can tell from the marks branded on the mother cows

which ones belong to the man for whom he works. It is his job to throw his rope around the heels of each little calf that follows any of these cows and drag it out of the crowd of cattle.

The work is hard and exciting, but the cowboy's horse knows exactly how to help his master. The cowboy rides in among the cattle and skillfully throws his rope. No matter how the calves try to keep from being caught or how fast they run, the cowboys soon catch them all. Each one is taken to the man who does the branding.

When you are told that the owner's mark, or brand, is burned into a little calf's skin, you feel sorry for the little animal. But the brand does not burn deep enough to hurt very much or very long. It just singes the hide or skin of the calf in one small place so that no hair can grow there again. In a moment the little calf is running back to its mother, and in a day or two the burn has healed.

Cattle look much alike. The owners could not tell which animals belonged to them, when it came time to sell them, if each animal had not been branded or marked.

You can see that the cowboys have a busy time when they try to separate the herds. They work hard to collect each man's cattle.

The cattle graze until autumn. Then grass begins to get scarce. When winter comes, snow sometimes covers the ranges. So autumn is the time when the cattle-raisers send their animals to market. Sometimes they take them to farms and feed them on corn until they are fat and heavy. Then they can be sold for high prices.

Many years ago there used to be many more cowboys than there are now. In those times they drove cattle in huge herds all the way from the range to the place where they were sold.

Often the journey was many hundred miles and took several weeks. There were no trains on which the cattle could ride to market.

Now the cattle are taken to the packing houses on trains or trucks. Many of these packing houses are in Illinois, Missouri, and Nebraska. There the animals are made into the cuts of meat that you see in the meat markets.

Packing houses prepare the meat of beef cattle, sheep, and hogs for food, and sell it either fresh, dried, or canned. They also make gelatin and jelly from parts of the hoofs of young cattle. Farmers feed to poultry special foods made in packing houses. In their vegetable fields, they use fertilizers made there, too.

## How the Indians Dried Meat

THERE were no cattle in America when Columbus made his voyage of discovery. The first oxen and cows were brought years later by other people who came from Europe.

There were plenty of wild animals, but no tame ones. The Indians in the eastern part of America used to get their meat by hunting deer, elk, moose, bears, and other animals that lived in the forests. In the West there were great open plains on which buffaloes roamed in large herds. The Indians killed them for their meat.

The Indians often dried some of the meat of the buffaloes they killed. This is the way they did it. First they cut the meat into wide slices. Then they folded these slices over poles and hung them up to dry.

They drove two tall posts into the ground, just far enough apart to have one post hold up one end of the stickful of meat, and the other post the other end.

The meat was left to dry in the sun and wind until it turned brown and hard. Then the Indi-



ans took the sticks down and slid off the slices of meat.

They always saved some dried meat to eat in the winter. They packed it in a hole they dug in the ground which they lined with dry grass. They covered the hole with branches and earth. It was their storehouse for food.



There are still some parts of the world, far away, where the people dry meat and save it in a similar way. They do it in some parts of South America.

The Indians used to pound some of their dried meat between two stones until it was a fine powder. They packed this in leather bags, and stored it.

The Indians made marrow fat to eat with dried meat. Marrow is found inside the bones of ani-

mals. The Indians used to crack open the bones of buffaloes and other animals by pounding them with stones. They scooped out the marrow with sticks, and put it into big clay pots which they hung over the fire. As it got hotter, the marrow melted until it looked like butter.

After it cooled, the Indians packed the marrow fat in bags made of the skins of animals and shaped like footballs. They put it away until they wanted some to eat. Then they scooped some out, with a spoon made of bone, and spread it on strips of dried meat, just as we spread butter on bread.

Sometimes the Indians made little balls of the meat powder and dried berries, dried vegetables, and marrow fat all rolled together. They never went hunting without taking some of these balls for food. They called the mixture pemmican.

Arctic explorers even today carry with them something like pemmican. It is very strengthening food.

## Sheep and Hogs

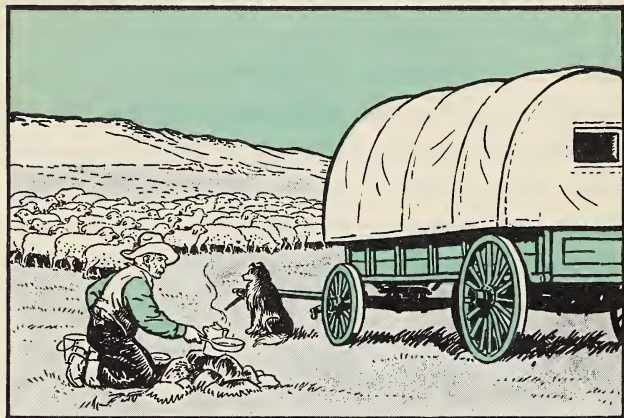
HAVE you seen sheep grazing in the grassy fields on farms? There are many farmers in our country who raise sheep. They cut off the sheep's curly coat of wool, or shear it, as they say. They sell it to be made into clothing. They sell the meat from the sheep and lambs to packing houses and markets.

### *Sheep Ranching*

Most of our mutton and lamb comes from the sheep that are raised in the States where sheep ranching is a very important business. Texas is the leading State in the raising of sheep. There are many large ranches in New Mexico, California, Oregon, Idaho, Montana, Wyoming, and Colorado, too. On the map, you can see that these States make a sort of belt, much as the cattle States, the corn States, and the wheat States do.

In Texas, the sheep usually graze in pastures which belong to their owners. In most of the other States where sheep are raised, they are

taken in large flocks to special places called ranges, along the slopes of the hills and on the sides of the mountains. The sheep stay on the ranges about nine months every year.



The sheep-owners do not own these ranges. They are in the National Forests. They are public lands which anyone can use if he obeys the rules. He has to pay a little money, too.

The man who takes care of the sheep on ranges is called a herder or shepherd. He has dogs to help him, and the man and the dogs stay with the sheep day and night all through the grazing season.

They move from one part of the range to another after the sheep have eaten all the grass in one

place. The flocks travel many miles to find new grassy feeding places.

Usually the herder lives in a wagon which he drives along with the sheep whenever he moves them to a new part of the range. In it he carries clothing, a supply of food, and whatever else he needs while he is away from home.

Another man, called a camp tender, brings food to the herder whenever he needs a new supply. The tender can usually do this for two or more herders. It depends on how far he has to haul the supplies, and on how rough the ground is over which he has to travel.

In the summer, the herder takes his sheep to grazing lands among the mountains. He lives in a tent, because he cannot drive his wagon up and down the steep slopes.

Early each morning, the sheep leave the place where they have been sleeping. They graze until the sun gets warm. Then they drink from a brook or spring, and go under the shady trees. When it gets cool again in the afternoon, the sheep graze some more. The herder cooks his food and moves his tent to a good place for the sheep to spend the night. On the ground he scatters a little salt for the sheep to lick. Sheep are very fond of salt.

The herder keeps his sheep on the ranges as far into the winter as he can. Sheep do not have to be put inside barns in the cold weather. Their thick wool coats keep them warm. Have you ever worn a coat lined with woolly sheepskin in the winter? If you have, you know how warm it is.

When the grass is covered with snow, the herder feeds the sheep a special food made from grain.

Some time during January, or February, in the Northern States, the herder moves his sheep back to the farms for winter feeding. Another reason for going home is that the little lambs are born in the spring. They must be cared for in barns.

### *Taking the Sheep and Lambs to Market*

When it is time to take the sheep and lambs to market, they are driven into freight cars called double-deckers, because they have two floors. Sheep are not so tall as beef cattle, and the car is high enough to have an upper and a lower floor.

The sheep go up a sloping board-walk into the car. While the cars are being loaded, a goat usually goes ahead of the flock as a leader, because he seems to understand better than any of the sheep what the men wish him to do.

After the sheep and lambs reach the packing



houses, their meat is prepared for the meat markets to sell. Some of it is canned. Most of it is sent to warehouses as fresh meat. Then the marketmen buy it. From their markets our mothers buy lamb and mutton for our dinners. Mutton is the meat from grown-up sheep.

### *Hogs*

In the Corn Belt there are a great many hogs. They eat corn and grow very big and fat.

If you have driven in a car through any corn-growing State, you have probably seen a great many hogs. Perhaps you call them pigs.

There are different breeds of hogs just as there are different breeds of cattle. They are of different colors. Some are brown, or brown and white. Some are black and white. Some are all white. Some pigs look almost red.

When you see the hogs, they are usually eating. They may be eating green clover or alfalfa. They may be eating ears of corn that have been thrown into the field for them. They may be at a trough eating the food that has been placed there for them.

A group of city children went out to visit a farm in the corn country. There were hundreds of young pigs with their mothers on this farm.

There were young pigs that were just a day old. There were some a few days old. Others were a week old, and some were older. The children were most interested in the tiny pigs that were only a day old. They were cunning and pretty.



These same children went out to the field where many hogs were eating. The farmer let each child take an ear of corn from the corn crib and feed it to these hogs. There was a fence around the field, so the children climbed up on the fence and threw the corn over. How the big hogs ran after that corn! And how they did enjoy it!

Hogs are taken to the packing houses when they are large enough. Our ham, pork, bacon, and sausages come from these animals.

Many farmers, on small farms all over our coun-

try, raise just a few hogs. In winter, some of these farmers kill their own hogs. They eat their own pork, and prepare the hams and bacon for smoking.

First, the hams and shoulders and the side strips are salted. Then, in the spring, they are placed in a shed and smoked. The smoke from a wood fire is made to go into the shed.

At the packing houses, the hams and bacon are prepared in much the same way. A liquid smoke is used instead of the wood smoke.

The pioneers in the western part of our country learned to smoke their meat, so that it would not spoil. Now we are glad to have our own smoked or cured ham and bacon because we like the flavor.

## Meat in Other Countries

THE first cattle in the world were wild and had to be hunted. In Europe there were cows, sheep, and goats. In Asia and on far-away islands there were strange animals. There were zebus with humped backs, and water buffaloes.

These kinds of animals were tamed and became man's faithful servants thousands of years ago. Ever since then they have helped man to draw his plows, to carry his burdens, and to have milk and meat.

There are places in Europe where some of the people eat meat from four-footed animals only twice a year. These times are at Christmas and at Easter when they have special dinners. The rest of the year, when they have meat, it usually comes from some kind of poultry.

They eat fish a great deal more than they eat meat. Many of them depend upon vegetables more than we do. In Switzerland and Holland cheese is a more important food than meat.

The reason why these people eat less meat than

Americans is this. Many of them live in countries where so much farming is done that there is little grazing land for cattle. If they have cows, or goats, they keep them for the milk they give. Nearly all of the meat has to be brought from faraway countries in South America or Australia. This makes the prices high.

Norway is one of the countries where people do not have large herds of cattle. Many of the men work as fishermen. They find it easier to get much of their food from the ocean than to try to raise cattle. Vegetables do not grow well in the sandy, rocky soil. Do you remember what cereal they raise for the flour they make into bread?

The people of Germany raise many geese for food. Perhaps you have read stories, like "Hansel and Gretel," that tell how boys and girls take care of the big flocks of geese.

Italy is a country that has rich soil. Plenty of vegetables and fruits grow there and are an important part of the people's food. Italy raises wheat, too. It is often made into macaroni and spaghetti which take the place of both meat and bread.

In France and Italy, and in Denmark and Holland, almost every cottage and farm has poultry

around it. The people raise enough eggs and poultry for themselves and for the people in other countries as well. They ship large quantities of eggs and poultry to other lands.

In the parts of France where a great many grapes grow, the fowls are allowed to wander among the vines nearly all the year round because they eat so many harmful insects.

All through Asia, and on many of the islands near Asia, the people have only a little meat. They have some, but not so much as the people in Europe.

If you lived in Japan, you would usually have fish instead of meat. It would often be used to flavor your rice, which is the commonest food in Japan just as it is in China and in India.

In China, the people are very fond of pork. Many of the Chinese people are so poor that they cannot buy much meat, but nearly every family keeps a pig or two which they feed on the scraps from their own table.

The only homes of some of the poorest people of China are boats, tied to the banks of rivers. Even then the people keep pigs in a box or a pen fastened on the outside of the boat. Often these families keep hens and ducks, too. There are narrow boards running from the boats to the



land so that the poultry can go ashore and hunt their food. They come home again at night.

A great many of the people in China eat soy beans instead of any kind of meat. Large crops of soy beans are now being grown in our own country. Have you ever seen soy beans?

There are many ways of cooking them. Recently, people have found out that oil made from soy beans can be used instead of lard, or other oils with which cooking is done. Soy beans can also be used in making breakfast cereals, chocolate candy, macaroni, spaghetti, and pastry.

In India, the people do not eat pork. They raise plenty of dairy cattle, but do not eat the meat because they believe that cows are sacred animals. Rice and millet are the people's most important food.

It is impossible to raise cattle in the deserts of Africa because there is no grass. The only animals that can eat the plants that grow there are the camels, the sheep, and the goats. In other parts of Africa there are thick jungles. It is too hot and too wet for cattle, and the swarms of insects are so thick that any cattle like ours would have a very uncomfortable time.

## Hens and Other Poultry

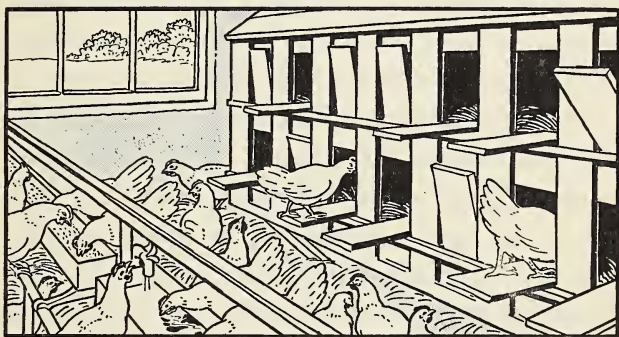
A GIRL who lived in the city had an uncle who raised hens, turkeys, ducks, and geese. The uncle's farm was called a poultry farm. This girl had a good chance to discover many things that she had not known about the different kinds of poultry. She found that they are not all of the same size, and that they are not all of the same color.

### *Hens and Chickens*

Poultry is the family name for the hens and chickens, the ducks, the geese, the turkeys, and the guinea fowls we see on farms. A great many of these birds live on the farms in all parts of our country. Farmers raise them because their flesh makes good food. Some kinds of hens are raised for their eggs as well as for the meat we get from them and their chickens.

In our country there are a great many poultry farms. Have you ever visited one? There are long houses with many windows in them. All around the houses and out in the fields you see many white or brown or gray hens and chickens.

On a poultry farm, we see speckled gray hens, and learn that many of them are named Plymouth Rock after the place where the Pilgrims landed. We see buff hens and brown hens. The biggest ones, with feathers on their legs, are Brahmas. Some of the smaller buff or brown ones are Cochin hens.



There are also black hens and white hens, but some of these belong to one breed and some to another. So when you see hens colored in either of those ways, ask the farmer if you wish to be sure of their names.

### *Turkeys and Guinea Fowls*

Turkeys are harder to raise than any other kind of poultry. If the young ones get their feet wet, they are almost sure to catch cold.

Often they die before they are big enough to be made into somebody's Thanksgiving dinner.

Turkeys are not all alike, any more than hens are. Some are black, some are white, some are slate-colored and some are buff. The commonest kind is the Bronze turkey, and it is also the handsomest. Its feathers are a mixture of black, bronze, and yellow or orange. The tips are white. These big fowls strut around the farmyard as if they were proud of their good looks.

Sometimes men who raise the common kinds of poultry raise guinea fowls, too. This kind of bird is somewhat like the wild pheasants that live in the woods and meadows in the quiet country. The first ones came from Africa.

Guinea fowls are quarrelsome and noisy. You would laugh to hear the strange sounds they make. It is even funnier than a turkey's "gobble, gobble, gobble."

### *Ducks and Geese*

Some farmers raise ducks and geese for the markets, too. They have ponds on their farms because these fowls like a place to swim. It is great fun to watch ducks and geese marching to and from the water. They go in long lines and make a loud quacking noise.

Ducks and geese are water fowl. They have webbed feet and are fine swimmers. Once in a while a mother hen is set on duck eggs to hatch them. When the little ducklings come out of the egg, they try to find a pond. The hen follows them, clucking anxiously. She does not understand it at all when the ducklings jump into the water and start swimming. Chickens do not swim.

Some ducks are pretty birds. One kind has glossy green on its neck, and brown and dark gray on its back. Its wings are marked with blue and white. Other ducks are all brown, or gray, or white.

Geese, which are larger than ducks, and have longer necks, waddle about on land just as clumsily as ducks do. One kind is almost all pure white. Others are part black and part white, and some are either light gray or dark gray. Sometimes you see a goose with a buff breast with black lines on it.

### *Taking Care of Poultry*

An interesting time to visit a farm where poultry is raised is in the spring when there are young ones. The tiny chickens and ducklings are pretty and cunning.

Some are hatched from the eggs by mother hens and mother ducks. But many chickens on the large farms are hatched in another way. The farmers have machines that hold the eggs and keep them warm until the little chickens are hatched. These large machines take care of many more eggs than a mother hen could care for. They also have heated houses, called brooders, to keep the young chickens warm.

If you have visited a farm where chickens, or any other kind of poultry, are raised, you know what they eat. Perhaps you have fed them corn. What fun it is to take a handful of corn and scatter it around! The chickens come running from every direction and gobble up the grains almost as fast as we can scatter them.

Many farmers feed their poultry a prepared food. This is made by people who have studied just what these birds need to make them grow. It is very important for the young ones to have the right kind of food.

To make poultry grow, they need good houses, good food, a chance to get gravel, grass, worms, and other things they find in the ground in the poultry yard and in the fields. Poultry farmers keep the houses of these birds very clean and neat.



Have you ever been in the house where the hens live while they are laying eggs? If you have been in one, you have seen the rows and rows of nests. It is fun to look for the eggs that have been laid in these nests.

Laying hens are fed a soft food in the morning and hard corn later in the day. Between times they scratch for what they can find in the poultry yard or in the field.

Sitting hens are the mother hens that hatch the eggs. They sit on the nests of eggs. These must be in a quiet place and must not be disturbed. The hens sit on the nests for twenty-one days before the chicks will hatch. Ducks and turkeys must sit on their eggs twenty-eight days before they will hatch.

If farmers did not raise hens, we should miss our breakfast eggs. We should think our Thanksgiving and Christmas dinners rather disappointing if we had no turkeys, chickens, geese, or ducks, with wishbones and drumsticks.

## Fish and Fishermen

WHENEVER you go fishing, you have great fun, of course. A fish may steal your bait, and you may get your rod and your hook and line all tangled up. But how proud you are if you carry home a few speckled brook trout! You may have gone out on a lake and fished with just a hook and line from a row-boat.

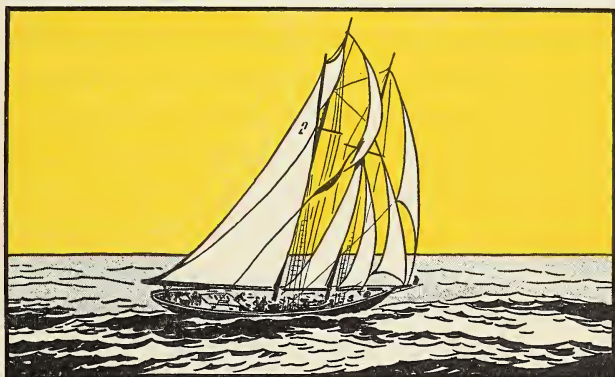
If you caught a black bass, what a pull you had to land him in the boat! If you go to the seashore and fish from the rocks, the fish you catch are probably cunners, or blue perch.

Perhaps your father has showed you how to clean your fish. Perhaps your mother has taught you how to cook them. How good they taste!

Many children and many grown-ups think it is fun to fish. But there are many people who fish because it is their work. Have you ever thought that a great many men earn their living by catching fish for us to eat? To them, fishing is not play, but hard work.

## *When Fishing is Work*

When you go to Boston, or Gloucester, in Massachusetts, you will be interested in visiting the wharves where the fishing boats come in. The fishermen will tell you exciting stories about their adventures when they go to sea.



They often go fishing for weeks at a time, even in winter. They sail hundreds of miles. Sometimes it is cold and foggy the whole time. Sometimes the boats have to dodge icebergs. The fishermen usually stay at sea until they have filled their holds so full that you would say there wasn't room for one more fish.

The boats these fishermen use are called schooners. They carry seven or eight small flat-

bottomed rowboats called dories. The schooners go out where the fishing is to be done. Then two men row away from the schooner in each of these dories.

Each dory has a strong line about a mile long. At the end of each six feet, along this long line, there are short lines each with a sinker and a baited hook at the end.

The fishermen let the long line run out of the dory. Every little distance there is a float to keep the line from sinking too deep. The short lines reach all the way to the bottom where the cod and the haddock and the halibut live.

By and by the fishermen pull the line out of the water. Little by little they run it across their dory. When they come to one of the short lines and find a fish on the hook, they take the fish off and drop it in the bottom of the dory. When they have a boatload, they signal to the schooner by holding an oar up in the air.

The schooner goes to one dory after another and takes the fish on board. Then the fishermen bait the lines again and lower them into the water to catch more fish.

There are other fishing boats called trawlers. A trawl is a big net which the fishermen lower into the water. As the trawler goes along, it

drags the net. By and by machinery hauls the net aboard the trawler and the fish are dumped out on the deck.

Some trawls are used to catch mackerel and other fish that swim in great crowds, called schools, near the surface of the water. Other trawls are lowered deeper so that they drag along close to the bottom.

The fishermen usually find many kinds of fish in their trawls. They are kept busy for a long time separating them. Then they cut out of the fish the parts that are not worth saving. The parts that are good for food, they pack in bins in the hold of the schooner.

First, they spread out some of the fish and lay ice upon them. Next, they spread more fish and then more ice, and more fish and more ice, until the bins are filled.

When the fishermen get back home, they sell some of the fish fresh. They send some to factories to be salted or dried.

The workmen soak the fish in a mixture of salt and water and then spread them on long wide tables out-of-doors. They leave them to dry in the sun and the wind until the fish are as hard as boards.

Then the fish are taken into the factory and

prepared for packing in cans or boxes. A great deal of this fish is sent to countries across the sea.

### *Codfish*

Do you like the crisp brown fish cakes that your mother sometimes makes? Usually they are made of dried codfish. Your mother has soaked the fish in water to take out some of the salt, and to make the fish soft again. Then she has cooked it.

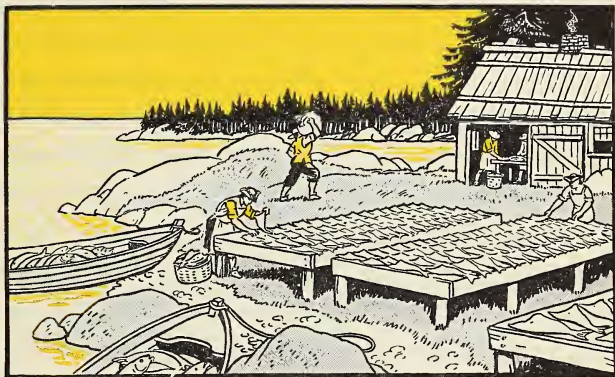
In our country and in Europe, cod has been one of the most important food fishes for a great many years.

A few years after Columbus made his voyage to America, an English sailor named John Cabot made another voyage. He discovered the island Newfoundland, which lies off the eastern coast of Canada. Ever since then fishermen from Europe have been crossing the Atlantic to catch codfish in the waters near Newfoundland and the shores of North America.

Several years before the Pilgrim Fathers came to America, another English sailor made a voyage to what is now New England. He found the waters near the shore so full of codfish that he gave the name Cape Cod to one of the capes in



Massachusetts. It is the cape that is shaped like a man's arm and fist. Can you find it on the map? The picture shows how the Pilgrims dried codfish.



### *Salmon*

Catching salmon and canning it is a great business in the farthest northwest corner of our country, and in Alaska which is farther up the Pacific Coast of North America.

Salmon has been a favorite food for a great many years. Some is eaten fresh, but a great deal more comes in cans.

The cavemen knew this fish, more than 15,000 years ago. Explorers in France once discovered a cave that had been used as a home as long ago as that. They found a piece of reindeer bone

with a picture carved on it, which showed salmon swimming in a river.

Fishermen do not have to go far out to sea to catch salmon. Sometimes, in a river, they set up a fish wheel, as in the picture on page 296.

The wheel is somewhat like the big reels on which you have your garden hose rolled up, but it is very much taller and wider. Around the rim of this wheel are pockets made of fish net. As the wheel turns, it dips into the water and scoops the fish into these pockets. Then the wheel keeps on turning, and when the pockets are upside down, out drop the salmon into a wide flat boat.

Salmon fishermen also build traps across the rivers. They are like fences built of logs standing straight up in the bed of the river. Wire netting is strung between the logs. The whole trap is shaped so that the salmon can easily swim into it but can never find their way out of it.

Finally, when a great many salmon have crowded into the inside corner of the trap, the fishermen use machinery to lower a huge dip net and bring it up brimful of salmon.

Sometimes the fishermen chase salmon in motor boats. They surround a great many of the fish with a big net which has one edge close to the surface and the other edge on the bottom of the

river. The net can be closed up like a paper bag when the men pull ropes. After the net is filled with fish, horses haul it ashore.

How does it happen that salmon fishing is done in rivers instead of in the ocean? To answer this question, we must tell you the strange story about the whole life of this fish.

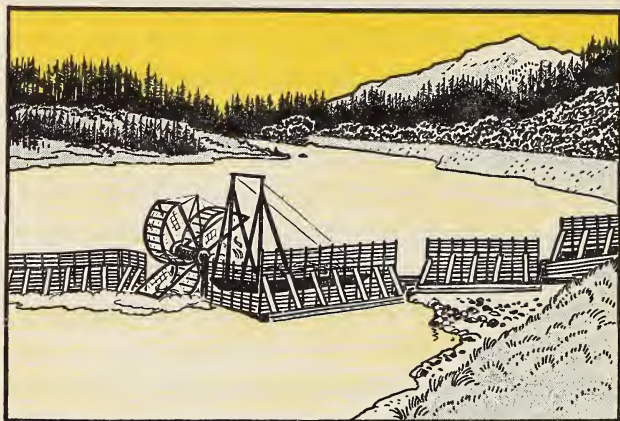
First, the mother fish bury millions of little salmon eggs in the gravel in the cold rivers of the Northwest. When spring comes, the water grows warmer and tiny fish are hatched. Soon they begin to move their tiny fins, and swim about to hunt food. As the little salmon grow stronger, they swim down the rivers until they reach the ocean.

No one knows where they go for the next few years. Some people think they stay near the mouths of the rivers. Others think they make long journeys out into the salty ocean.

When the salmon are between two and six years old, they turn back toward the very same fresh-water rivers where they were born. How wonderful it is that they can find the way!

Sometimes they follow a river for two or three thousand miles until they reach their first homes. They swim only ten or twenty miles a day, so their journey up the river takes a long time.

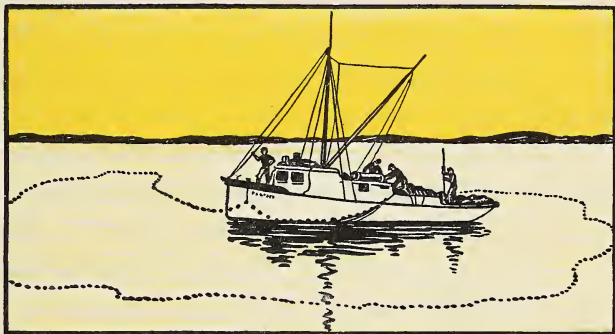
The rivers are wide at their mouths and grow narrower and narrower farther from the sea. The salmon get crowded closer and closer together. At some places, if they stayed still, you could walk across a river by stepping on the salmon.



All the way, as they are swimming, the fish are chased by enemies. There are eagles, gulls, and other birds that swoop down and seize many of them. Bears, foxes, and wolves are fond of salmon. And when they are hungry, they wade into the shallow rivers and pull out the fish with their paws. Beavers, too, catch and eat many salmon. There are also the traps and the fishermen that millions of salmon cannot escape.

No dangers keep the fish from swimming up-

stream, toward home. They never turn back toward the ocean. They often come to waterfalls. These may be twice as high as a tall man, but the fish jump over them. They fight their way through the rushing water and over rough rocks. Sometimes they are helped by salmon ladders that men have built. These are wide pools of water arranged like stairs. It is easy for the fish to get from the lower pools to the higher ones.



After many days, the fish that have escaped from the animals and the fishermen succeed in finding the place where they were hatched. They are thin because they have eaten nothing since they left the salt water. They find mates. The mother fish lay their eggs in the gravel. Then both the father and the mother fish die.

The eggs hatch the next spring. When they are



big enough, many of the tiny salmon make the same journey to the ocean, and back again, that their parents made. Of course, many of them never get back because they are caught somewhere along the way.

### *Many Kinds of Fish*

When you visit a fish market, are you surprised to see how many kinds of fish we may have for food? There are fish of many sizes and shapes. The largest ones are halibut and swordfish. These are so big that you hardly ever see a whole one in a market.

Swordfish have a long sharp bone, like a sword, sticking out from their noses. They are very strong, and sometimes they fight so hard to escape from the fishermen that they run their swords right through the bottom of a small boat. Usually, they are not caught on lines or in nets as smaller fish are. They have to be speared, or harpooned, and are hauled into the schooners by a rope.

Among the smallest fish you see in a market are herring. They are caught in nets. The nets are woven so fine that when a herring sticks its head through one of the meshes, it cannot get out again. The young herring are packed in



cans just as sardines are. The large-sized ones are sometimes pickled or smoked. They are the stiff, dry, golden-brown fish that you often see in the markets.

Perhaps you have had kippered herring. Kippered is the name of the way they have been prepared. They have been dried by smoking and have had salt and spice added to them to make them taste good.

Do you know what kind of fish finnan haddie is? It is haddock, a fish somewhat like a cod. It has been dried by smoking it in a special way. It is named after a small fishing town in Scotland.

There are several kinds of middle-sized fish. Bass are caught in the ocean and in lakes. Butterfish are so named because their skin is very slippery.

Flounders are broad, flat fish which live close to the bottom of the ocean. They are dark colored on their upper sides and light underneath.

Mackerel are the prettiest fish you see in a market. They are green on top, with blue stripes, and silvery underneath.

Shad seem to have more tiny bones than other fish and we have to be careful to pick them out when we eat this fish. Have you ever tasted shad roe? That is the name for the eggs of shad.

Whitefish is somewhat like salmon and somewhat like trout. It is one of the best food fishes in the Great Lakes in the central part of our country.

There is a picture book from which you may learn about different kinds of fishes. It is called *Do You Know About Fishes?* and is written by Janet Smalley.

### *Lobsters*

In the fish market, you see live lobsters, grayish-green in color and lying in boxes of cracked ice. They wave their claws in the air as they try to crawl over each other. It is hard to believe that they are not clumsy in the water.

If you could watch the lobsters before they are caught, you would find that they can move quite fast. They walk about on the bottom of the sea on the tips of their slender legs.

Very often one lobster gets into a fight with another. Sometimes they get their claws nipped off, but a new claw soon grows in the place of the lost one. Usually the new claw is not the same size as the old one.

When a lobster is only a few days old, it has no shell. It may be snapped up by the first fish that comes along. It may be eaten by a bigger lobster.

Young lobsters swim off by themselves and hide in cracks in the rocks until their shells are formed. They grow fast, and once every year they shed their shells and grow new and larger ones.

Lobsters are caught in traps made of wooden slats. The traps are rounded on top and flat on the bottom. The ends are made of netting, with a hole in the middle large enough for a lobster to crawl through. But a lobster cannot climb out.

The traps are baited with dead fish or with meat. They are partly filled with stones so they will sink to the bottom. Every day or two, the fishermen row out to where they have sunk their traps. They haul them up with ropes, and take out the lobsters they have caught.

The people of Japan are very fond of crabmeat. Some of the crabs they catch are a foot wide and a foot and a half long. Sometimes one grows to be a giant. From tip to tip his big front claws measure more than twelve feet. How would you like to meet a crab of that size?

### *Oysters*

You see oysters in the fish markets. Our oysters have gray shells. In some countries oyster shells are green, in some red, and in others they have as many colors as a rainbow.

Oysters grow in beds made by planting empty oyster shells at the bottom of salty water. The best place for an oyster bed is in some bay into which fresh-water rivers flow. This keeps the water from getting too salt.

Young oysters are so small that it would take three hundred or more to make an inch. For two weeks they swim about by the help of a little tail as fine as a hair. Then a foot grows and the oysters begin to crawl.



Finally they attach themselves to a smooth stone or a shell and begin to grow shells of their own. They are big enough to sell in about four years. You can tell how old an oyster is if you count the deep ridges in its shell.

A great many oysters never grow up to be eaten by people. They are killed by starfish

which wrap their arms around the oysters' shells and make them open. Then they suck up the soft oysters.

Oysters are usually gathered from the bottom of the water by big tongs that are let down from boats. The tongs look like two rakes fastened together. They are dragged along until they are filled and then are hoisted aboard the boat.

### *Clams*

Clams are shellfish somewhat like oysters. The best ones are found along the coast of New England. The people who live in that part of our country are very fond of clam chowder and steamed clams.

Sometimes, when a large group of people go to a beach to spend the day, they have a clam-bake. First they dig a long, wide hole in the sand, and cover the bottom with stones. Then they build a blazing fire.

When the stones are almost red hot, the man who is going to bake the clams covers the stones with seaweed. Then he spreads the clams on the seaweed and covers them with more seaweed. The clams are left to bake for several hours. Nearly everyone thinks that clams baked in this way taste better than any others.

You would have a good time digging clams. It sounds easy enough when we tell you what you have to do. When the tide is out, you walk out on the sand flats, and hunt for small holes about half as big as a lead pencil. You must take with you a short-handled iron rake with long curved teeth.

Here is one of the little holes! You strike into the sand with your rake and start to dig. The next thing you know, up squirts a little jet of water right into your face. Yes, there's a clam down there in the sand. It has shot up the water by snapping its shell shut. Dig carefully and you will find the clam about a foot down in the sand.

Clams were the favorite food of the Indians who lived along the seashore. When the Indians hunted for clams, they just waded barefoot in the shallow water. They felt around with their toes in the sand until they felt the clams.

The Indians ate so many clams and oysters that there was always a huge pile of shells near an Indian village.

Full-grown clams are about three inches long. They usually grow to that size in about a year.

At first they are tiny things, about the same size as the youngest oysters. They go spinning



through the water for a few days, while they are growing their shells. Then they settle to the bottom and attach themselves to shells, seaweed, and pebbles by little threads which they spin.

As soon as their shells are strong enough, clams begin to burrow into the sand. They come out of the sand now and then and creep a little distance. They have one strong little foot. At last they dig in deep and never come to the surface again.

There are little clams in many of our lakes and rivers. They are called mussels, and people eat them just as they do salt-water clams.

In some islands in the southern part of the Pacific Ocean, not far from China, there are huge clams. They weigh five hundred pounds. The people use the shells for axes.

There is a book called *Here's Juggins*, by Amy Stone, that you would like to read. It tells about fishing for cunners and other fish. It tells also about catching lobsters, digging clams, and having a clambake.

## Fishing Long Ago and Far Away

THE Indians who lived in our country depended a great deal upon fish for food. They fished in the streams and the rivers. They fished in fresh water and in salt water. They ate some of the fish when they were fresh, and they preserved some of them to use in the long winter when it was hard for them to find food.

They were fond of salmon and they preserved it by smoking it over a fire. It would keep a year after it had been prepared in this way. Sometimes they dried their salmon and pounded it into a powder. The Indians of Alaska still dry great numbers of salmon which they use as food for themselves, and for the dogs that draw their sleds.

When the Pilgrims came, they did a great deal of fishing. Cod was one of the foods which they could get without much trouble. They had plenty for themselves, and they sent shiploads to England and to Spain.

In the olden days, the fishing boats, or schooners, had only sails. Now they have engines, too. They do not have to wait for a good wind in order to move from one fishing ground to another.

The old-fashioned way of fishing was by hooks and lines lowered into the water, one by one, from the decks of the boats. It was slow work, baiting the hooks, pulling in the lines, and taking off the fish.

### *Fishing in Other Lands*

In America we eat a great deal of fish, but not nearly so much as the people of some other countries.

If you lived in Norway, you would probably have fresh fish at some meal every day instead of only once or twice a week as most Americans do.

The people in Norway eat fish that has been dried or smoked, too. This kind keeps a long time. In some parts of Norway, the people soak the dried or smoked fish in oil and eat it without cooking it.

The people of Japan eat more fish than any other people in the world. They have all the kinds we have, and many others. Even in parts of the country that are far from the sea, you would hardly ever go to a dinner where fish was not served. There would be more than one kind, and each kind would be cooked in a different way. Some would be served raw.

Japan hasn't much land that is suited to the

raising of cattle, and many of the people are so poor that they cannot afford to pay for meats brought from other countries. Many of them gather a great deal of their food from the sea.

Near the shores of Japan, the ocean is crowded with fishing boats. Some are like the schooners Americans use. Many others are little sailboats, or rowboats.

The fish markets are different from ours. All the fish are kept in water, alive, until they are sold. In some of the villages, you might meet two men carrying a great tub of live fish hanging from a pole laid across a shoulder of each man. The customers pick out the fish they want. The peddlers then kill the fish for them.

Sometimes Japanese fishermen, on lakes and rivers, sit in small rowboats. In the boat are baskets to hold the fish they catch.

These fishermen have big black birds, somewhat like ducks except that they have long thin necks and very sharp beaks. They can dive and swim under water so fast that few fish can get away from them.

The fishermen have taught these birds to seize the fish in their beaks and to bring them back to the raft without swallowing them. When one of these birds has done well with his fishing, his

master pets him and gives him a small bit of fish as a reward. These birds often catch three fish each, in two minutes. Could you do as well?



On other islands in the Pacific Ocean, the natives have other strange ways of fishing. The natives of Hawaii often fish at night. They light torches and wade into the shallow water near the shore. The fish are curious, and swim close to the light to see what it is. The fishermen then spear the fish, or catch them in nets which they dip very quickly into the water.

Sometimes in the daytime a fisherman catches a big fish on the sharp point of a spear. A man must have bright eyes to do this, and he must aim well. He must aim well, too, if he uses what is called a throw net.

He runs into the water as soon as he sees a fish and throws a heavy net around it. The net sinks and holds the fish until the man can reach it.

If a man sees a great many small fish in one place, he sometimes jumps right into the middle of them, and tries to drive some of the fish toward a net that is in the water near the shore.

There is one small island where schools of fish come close to the shore once or twice a year. When anyone sees a school, he beats a gong. All the men of the village come running to the beach, each with a branch of a coconut palm in his hand. They plunge into the water and wade or swim out beyond the school of fish. Then they all turn, go close together, and make a half-circle.

Each man holds his palm branch straight down in the water. The leader gives a signal. All the men move slowly toward the shore, driving the fish before them. Soon the leaping, silvery fish get into water so shallow they cannot swim. The men rush toward them and throw as many as they can upon the dry land. They catch enough to have a fine feast.

Sometimes these islanders carry a small net in each hand. They wade into the water, side by side, form a circle around the fish, and scoop up as many as they can in their nets.



There is another island where the natives fly kites when they fish. Hanging from the kite is a string long enough to reach down to the water. As the kite flies, it makes the bait skip along like some big insect. When the fish jump for it, they are caught on the hook.

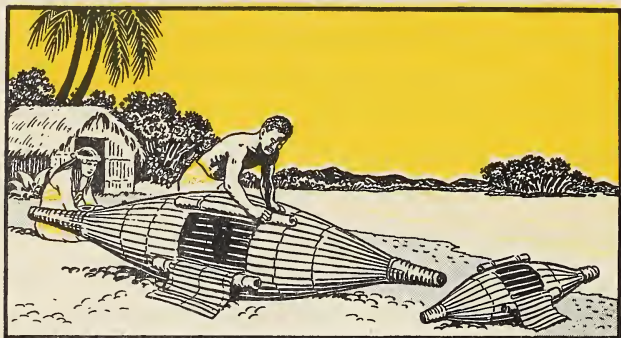
In some islands, the people use fish cars, like the one in the next picture. When a man goes fishing, he tows a fish car behind his canoe. He puts his fish into it as fast as he catches them. He keeps them alive until it is time to eat them.

In other islands, the natives go out on the water in fleets of canoes. The canoes are strung together with long ropes which have large white leaves hanging from them. The water is so clear that the leaves cast shadows on the bottom. This frightens the fish toward the shore where they are caught in nets hung on circles of stakes.

There is a great river in South America named the Amazon. For a great many miles it flows through thick jungles. The people depend upon fish for meat because no cattle can live there. There is no grass for them to eat.

When these people go fishing, they throw their baited line into the river. Perhaps they tie one end to a tree. Then they watch. When fish come to nibble the bait, the fishermen shoot ar-

rows at them. Almost always they hit the fish. The arrows keep the fish floating and the men paddle out in canoes to get them. Sometimes they pull in the fish with their lines.



The Eskimos also have to work hard to catch fish. When an Eskimo goes fishing, he uses a short pole made of pieces of driftwood tied together. Where Eskimos live, there are no trees with branches that would make fish poles as long as ours.

An Eskimo's line is made from the skin of a seal, cut into thin strips. He has a hook which he has carved from a piece of bone. Sometimes he chops a hole through the ice and spears fish through it. He also spears seals through holes in the ice.

The best time for hunting seals is in the winter

or spring, before the sun melts the ice that covers the ocean. The seals are under the ice, but they have to gnaw holes through thin spots so they can come up to breathe.



The Eskimos take their dogs out on the ice. When the dogs stop and begin to scratch away the snow, the Eskimos know they have smelled a seal. They dig away more snow and, sure enough, there is a breathing hole.

Then they stick a peg, made of bone, into the snow at the edge of the hole and wait. They have a harpoon ready to throw. The harpoon is like a spear. Sometimes they wait for hours.

At last the peg moves a little. This means that the seal is moving about underneath. An Eskimo throws his harpoon, with a line tied to it,

as close to the peg as he can. If he makes a good hit, the harpoon goes into the seal. The Eskimo and his friends chop the hole larger and pull the seal out of the ice.

If you would like to go seal hunting with an Eskimo boy, you should read *One Day with Tuktu*, by Armstrong Sperry. It will give you a good idea of life among the Eskimos.

## Other Foods

**T**HE last part of our book tells about the best drinks for children — water, milk, and cocoa. You will be especially interested in the story about the beans from which cocoa and chocolate are made.

You will be interested to know, also, that the tea your parents drink is made from the dried leaves of one plant, and that their coffee is made from the dried and roasted berries of another plant.

There is a story that tells about the spices your mother uses in baking cakes and in cooking other foods. Another story tells about the salt that helps to make so many meats and vegetables taste good. Still another tells about the kinds of sugar we use. How many do you know?

The book ends with an imaginary journey to several parts of the world. You will see what different people have on their tables, the ways in which their food is like ours, and the ways in which it is different.



## Good Drinks for Children

WHEN we are thirsty, nothing tastes better than a good long drink of clear, cool water. Most of us get water so easily, just by turning a faucet, that we never stop to think how hard it would be to get along without it.

Ann was driving, with her father and mother, in the State of South Dakota one hot summer day. The air was so dry and hot that all of them became very thirsty. They had with them a thermos bottle of cold water, and once in a while they would stop and have a good drink. How good it tasted!

Late in the afternoon their water was all gone. They were very thirsty and were eager to reach their hotel. There they could have all the water they wanted.

It was dinner time before they reached the hotel where they were to spend the night. They hurried inside and asked for water even before they went to their rooms. The clerk gave each of them a glass of water, and it seemed to them that nothing had ever tasted better.

Then Ann and her father and mother went to



their rooms. The first thing each of them saw was a sign that said: "We want you to use as much water as you need while you are in our hotel, but please do not waste it. We have to haul every drop of it from a well fourteen miles away."

Until then, Ann had never been in a place where she had to be careful of water. But when she thought that someone must drive twenty-eight miles in the terrible heat when all the water in the hotel was used up, she tried to be careful. She also learned something about the value of water.

### *Water Supplies*

Many boys and girls live in cities or in large towns in the winter. There they have all the water they can use. But in the summer vacation, some of them go into the country for a week or a month or even longer. If they stay at a hotel in the country, they probably get water just as easily as they do at home. But if they stay on a farm, they sometimes have to pump the water from a well.

Of course, some farms have big electric pumps, but there are still a great many farms where the water is pumped by hand. There are some vil-

lages, too, where the people get their water from wells. They have to pump it with hand pumps.

Bob was driving with his father and mother in one of the beautiful State parks in our country. He saw a fountain that had been made from interesting rocks. These had been found in the park. Father stopped and they all got out of the car and had a drink of the icy cold water.

The water in the fountain came from a spring deep down in the ground. Perhaps you have seen a fountain of this kind. There are many of them in the different States in our country.

Many children and many grown-ups drink spring water. In some places the springs are so large that there is plenty of water to put into bottles to sell. It is sold not only to the people living near-by, but to the people in cities that are far away from the spring.

Where does the water come from that you drink every day? Does it come from a river, a lake, a well, or a spring?

An interesting place to visit is the pumping station that pumps the water from a lake or a river or from wells, into the pipes that take it to your home.

The machinery in the pumping station shines. It is kept very clean. All the time you are there

you hear the steady whirr of the motors. They are always busy pumping water into big storage tanks or reservoirs. Some reservoirs are real lakes, and some are lakes that men have made by digging a big place in the ground. Some are made by building strong walls of stone and earth around a field and then filling the space inside the walls with water. From the storage tanks or reservoirs, water flows through pipes to houses and other buildings.

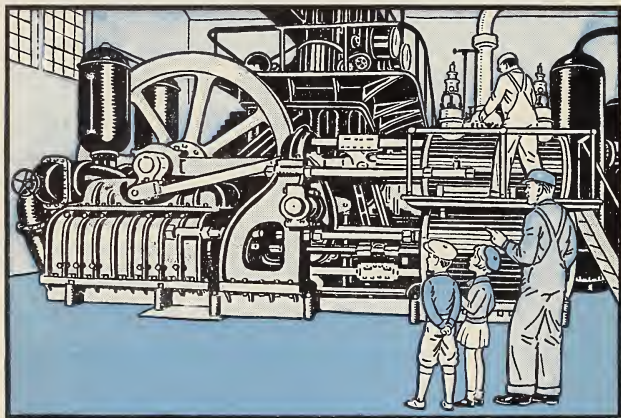
In the long-ago days in our country, there were no such pumping stations. Each family had a small well from which they pumped their water, or else they went to the springs that were near enough to supply them with water. They carried water home in pails.

Perhaps you have carried water in watering cans to your garden. If you have, you know that water is heavy to carry. You may be glad that you did not live in the long-ago days. Then boys and girls had to help to carry all the water the family used.

Sometimes the wells or springs were quite far away. It was hard work, but the children and the grown-ups had to do this work or go without water.

In many other countries people now have water

in their homes just as we do. But there are some countries and there are many towns and villages where water is scarce and has to be pumped by hand.



If you could visit some of the small towns and villages in Europe, you would see men and women and children standing around the fountains. They have brought pails or pitchers or anything that will hold water. When their turn comes, they fill their pitchers or pails and go home. Some of the people sit and rest along the way. They have come a long distance to get their water and the load seems very heavy before they get home.

In Italy, many of the people carry the water on their heads. There you often see little girls

walking along the roads with their mothers and carrying large pitchers of water on their heads. They can balance the pitchers just as well as their mothers can.

These people have come from the nearest well or watering trough. It is usually in the village, but sometimes it is just outside the village.

In the West Indies, too, you would see many women and children going home with water. Sometimes they carry it in big tin cans balanced on their heads. In many small towns in Mexico and South America, little donkeys haul barrels of water on carts. They go from house to house. Their drivers sell the water to the people who wish to buy it.



In some parts of the world there are deserts. On the deserts there are oases. These are the places where there are wells or springs.

Because there is water and because grain and

vegetables grow there, people can live in these oases. They can get water to drink from the wells or the springs. Travelers on the desert are glad to reach the oases, because they know that there they can find water for themselves and for their animals.

In Arabia and in many other dry lands, men work as water-carriers. They go through the villages selling water from big leather bags, and ring a bell or whistle to let the people know they are coming.

### *Water in Other Drinks, and in Foods*

We drink water as it comes from the faucet or the well, and we have it in other drinks. Lemonade, orangeade, limeade, and other cooling drinks are made by adding water to the juice of the fruits.

There is water in grapejuice, in ginger ale, in root beer and in the different kinds of soda pop.

Even in the juice of the fruits we eat there is a good deal of water. The tree takes water from the ground and from the air and some of it goes into the fruit.

We get water in vegetables, too, and even in meats.

Your mother may make cocoa or chocolate with



milk or with water. It tastes richer when it is made with milk. But, of course, there is a great deal of water in milk, too. A cow could not give milk if she did not have plenty of fresh water to drink.

### *Milk*

Of course, you know that milk is a food as well as a drink. Perhaps you like to drink it as well as you like water. Many children do. When it is cold, it tastes sweet and good.

Some children like to drink milk when it is warm and fresh from the cow. Only children who live on farms and those whose parents own cows can do this very often.

There are drinks made of milk that children like, too. Cocoa is often made with milk. It tastes rich and good. It is served hot in the winter and icy cold in the summer. Do you ever take a thermos bottle of cocoa made with milk when you go on a picnic? It tastes good with the sandwiches.

Some children like chocolate-milk. Once in a while, their mothers buy it from the milkman as a special treat for the boys and girls.

Then, there are the milk shakes. A chocolate milk shake or a vanilla milk shake is a great treat.

Have you tried one with an egg in it? A milk shake and a sandwich make a good lunch at the school lunchroom at noon.

### *Cocoa*

Have you watched your mother when she makes cocoa for you? She takes a can of cocoa and measures out the brown powder. She puts water, sugar, and milk or cream with it. The brown powder comes from cocoa beans. To see them growing, we should have to take a long trip.

Cocoa beans grow only where the soil is rich and the sun is hot. The best cocoa beans grow on low lands near the sea. They grow in Mexico, the West Indies, Africa, Hawaii, the Philippine Islands, and some of the small islands in the southern part of the Pacific Ocean.

The trees remind us of cherry trees except that they have large pinkish blossoms and wide glossy leaves which stay green all the year. To shade them from the sun, they are set among taller trees. In some countries, banana plants are set between the rows of cocoa trees to give shade.

Only about one blossom in a thousand turns into fruit. The fruit is a big pod shaped like a melon or a large cucumber. It has a rough skin,



*These men are cutting the cocoa pods from the trees. Notice the strange way in which the pods grow, and the queer shaped knives that the men are using.*

*The cocoa pods are tough and have to be split open so that the pulp and the beans can be scooped out.*



like a squash. Sometimes it is yellow with red stripes. Sometimes it is purple, or brown.

The pods grow out of the bare trunk of the tree all the way up and down and on the main branches. They do not grow on the smaller branches as our fruits do. They have very short stems.

Perhaps you have seen the redbud blossoms growing on the redbud trees. If you have, you know just how the blossoms and fruits grow on the cocoa tree.

The workers on cocoa plantations are often Negroes, just as they are on banana plantations. When it is time to harvest the pods, the men can reach some from the ground. To cut off the pods higher up, they use curved knives on the end of long poles. The men catch the pods as they fall.

The men then cut the pods in two and pass them to the women workers who scoop out the soft pink pulp with queer wooden spoons. In the pulp there are five rows of cocoa beans, often with as many as eight beans in each row. The beans are about the size and shape of almond nuts and have a hard purple or brown shell.

For a few days the beans are left in piles, covered with sand or clay or banana leaves. This is to let some of the oil come out. The Negroes

then spread the beans on bamboo matting and tread them out of the pulp with their bare feet. This is called "dancing cocoa."

Then they leave the beans in the sun to dry for four or five days. Men keep raking them back and forth so that they will all dry. In some villages in South America, so many cocoa beans are spread out to dry that the road looks as if it had a thick brown carpet.

When the beans are so dry that they crackle when you touch them, it is time to take off the shells. Inside you find a dark brown kernel that looks good enough to eat.

If you put one in your mouth, it tastes very bitter. It is not at all like the sweet chocolate of which everyone is so fond. You do not care to chew it. Much has to be done to cocoa beans before we can eat the food made from them.

Chocolate for candy and cocoa to drink are prepared in factories in our own country and in many others. Have you ever had Swiss sweet chocolate, or some from England or Holland?

If you were to visit one of these factories, you would smell chocolate a long distance before you reached the building. In one room in the factory, you would see the huge ovens in which the cocoa

beans are roasted. In others you would watch the machines that break the beans into small pieces called nibs. There are others that grind them into a powder as fine as flour. This is made into cocoa for drinking. There are special machines that measure powdered cocoa into cans and paste on the labels.

In another room, you would watch big machines with rollers that remind you of huge clothes wringers. They grind the cocoa beans into what looks like molasses. You watch the men pouring this into one end of another machine, and putting in also vanilla, sugar, milk, and nuts or raisins. At the other end, there come out the cakes of sweet chocolate ready to be wrapped in tinfoil.

When the Spaniards came to Mexico, long ago, they found the Indians were fond of a drink made from the seeds of a tree. This drink was called "chocolate."

"Latl" was the Indians' name for water, and "choco" was the noise made by the churn in which they made their drink. Mixed with it were vanilla and red peppers. The Indians stirred it until it was foamy, and drank it cold. It was much thicker than our hot chocolate.

The Spaniards tasted this drink and they liked it. When they went home, they taught their



families how to make it. From Spain, the use of cocoa beans spread to other countries. And now chocolate and cocoa, made, of course, in a different way, are favorite drinks everywhere.

## Drinks for Grown-Ups

PROBABLY your father and mother enjoy their hot or iced coffee as much as you enjoy your milk or your cocoa. It is a favorite drink for grown people almost everywhere in the world.

Coffee grows in the same climate and in the same kind of soil that is good for cocoa. It grows best where it is neither too hot nor too cold, so the sides of hills are well suited to the little bushes. Like cocoa trees, coffee bushes must be shaded while they are young.

### *Coffee*

There are many different kinds of coffee. The name Mocha on a box means that the coffee has come from Arabia. Coffee marked Java comes from an island of that name near India.

Most of our coffee comes from Brazil in South America where more than half of all the coffee used in the world is grown. It is Brazil's most important crop.

Each coffee bush is shaped like a haystack with a round top. In the season for blossoms, each

bush would remind you of a Christmas tree trimmed with strings of popcorn. The little blossoms are star-shaped, and grow in clusters. They smell very sweet. The bushes have shiny evergreen leaves.

Later in the season, after the berries have formed, you would think, at first, that the strings of popcorn had turned bright red. Each berry is about the size of a small cherry, or a cranberry. Sometimes bushes have blossoms, green berries, and ripe berries all at the same time.

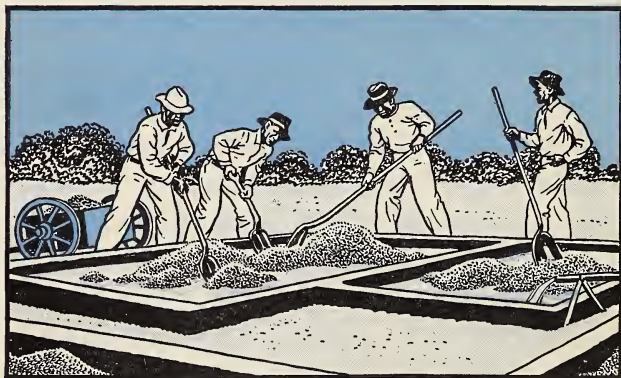
When the pickers gather the coffee, they run their hands along the whole length of a branch. This strips off the berries. Sometimes the coffee-pickers put the berries into baskets or bags, and sometimes they let them fall into a sheet laid on the ground.

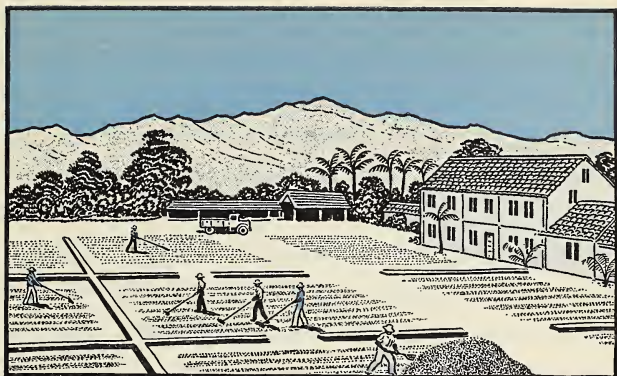
If we should put a coffee berry into our mouth and chew it, we should find it something like a cherry but not so good. In the center would be two hard little bluish beans, with their flat sides touching each other. Each berry has two skins, one as thin as the skin of a peanut.

The coffee beans are washed. This cleans off the pulp and the skins. Then the beans are spread out to dry. After that they are packed in cloth bags and sent to other countries.



When they leave their country, they are a pale green color. They turn brown when they are roasted. They have to be ground up fine before they can be made into a drink.





## Tea

Tea is another drink that is enjoyed by grown-up people. In some countries the people drink tea with every meal, morning, noon, and night. The people in England do this. They also have a cup in the middle of the afternoon.

The people of China and Japan drink a great deal of tea, too. In China the tea is often mixed with dried flowers to give it a pleasant taste. Some kinds of tea are dyed blue or some other color.

Perhaps your mother may invite some of her friends to a tea party in your house in the afternoon. She takes out her pretty cups and dainty linens. She makes fancy sandwiches and cookies to serve with the tea.

In England, the afternoon teas are much like

those your mother may have. The dishes are fine and pretty. But in England there would be very thin slices of bread and butter instead of sandwiches.

If we should visit a tea-room in Japan, we should find men and women sitting on little cushions on the floor instead of on chairs. Before we went in, we should be asked to leave our shoes outside the door. There are soft white mats on the floor and we must not soil them. A waitress wearing a gay kimono brings us a taste of tea in tiny china cups that have no handles.

At a tea party in Russia, men and women often drink their tea from tall thin glass tumblers. In each glass there is a slice of lemon.

Tea was a favorite drink in China more than one thousand years ago. In Europe, the people of Holland were the first to learn about it, and the English began to use it only a few years before the Pilgrims sailed to America.

Tea is grown in far-away lands in Asia. China, Japan, India, and the island of Ceylon, which is near India, grow the largest crops in the world.

Tea grows on hillsides best because it is cooler there than on lower ground. Also, the rain-water runs away instead of lying too long around the roots of the bushes. Some of the best tea in



the world grows high up on the mountains in India, more than a mile above the sea.

The tea bushes are evergreen, like cocoa trees and coffee bushes. They do not grow very high. The leaves are long and leathery, and remind us of the leaves of the willow tree. The youngest ones are colored along the edge. The blossoms are like wild roses, sometimes deep pink and sometimes creamy white. They turn into little green seed pods.

What part of the bush do you suppose is picked? It is not the seed pods, as on the cocoa tree and the coffee plant. It is not the blossoms. So it must be the leaves.

The women and children pick the leaves from the bushes. On their backs they carry big baskets, like clothes hampers, which are held in place by a strap that goes around the pickers' foreheads. This allows the pickers to use both hands.

If we watch the women and children at work, we see that they pick the leaves one at a time. They take only three or four new little leaves at the tips of the branches. We are interested to hear that each leaf has a special name. The one at the tip is called "Flowery Pekoe." The next one is "Orange Pekoe," the third is "Pekoe," and the fourth and largest is "Souchong."

Have you seen any of these names on the label of a package of tea?

The pickers fill their baskets and carry them into a building. There the leaves are sorted by size, because later each size is packed by itself.



Here are some of the things that happen to the leaves before they are packed. They are dried on wide shelves called tats. They are squeezed and twisted between big rollers, until they look like little green worms.

Next, they are left to stand for a while, and then hot air is fanned over them to dry them. Finally they are roasted. By this time the leaves are, of course, no longer green, but are black and crisp as we see them at home.

The different kinds of tea are sent to other

countries in big boxes lined with sheets of lead, because on sea voyages the damp ocean air would spoil the taste.

In our country, the packing houses that put tea into small packages have clever machines. They fold cardboard to make boxes that are air-proof, dustproof, and waterproof. They line the boxes with thin paper, measure out exactly the right amount of tea, weigh it, shut the box, and seal it tight. The machines do not make a mistake once in a thousand times. If one does, and puts in too little tea, it tosses that box aside, so that it will not be sent to the market.

If you would like to visit China where so much of our tea comes from, you should read *Liang and Lo*, a story with pictures by Kurt Wiese.

## Spices, Sugar, and Salt

IN YOUR mother's pantry, there is probably one shelf on which she keeps boxes of sweet-smelling spices. The names of some common ones are cinnamon, ginger, nutmeg, mace, cloves, and allspice. You probably sometimes have toasted bread with cinnamon sprinkled on it. You also have gingerbread, ginger ale, and sometimes preserved ginger. Perhaps you like a little powdered nutmeg in your milk shakes. Perhaps you have seen cloves stuck into cooked ham. So you are likely to know the names of these spices.

Your mother uses some of these spices when she is cooking cakes, pies, or puddings, and when she is making preserves. There are two others that she puts on the table so that people can spread or sprinkle a little on their meat. These are mustard and pepper.

Have you ever wondered where spices come from? Most of them come from plants that grow in far-away lands, and are brought to us from halfway around the world.

### *Where and How Spices Grow*

Some spices come from India, some from China,

some from the islands near Asia where so much coffee and tea are grown. Some come from Africa, and some from the West Indies. Spain grows the best pepper, and England the best mustard. In all there are more than thirty foreign lands from which spices are sent to our country, and to the other countries of the world.

Some spices come from one part of a plant and some from another. Whole cloves, which look like little tacks or nails, are the dried buds of large trees. Cinnamon is the dried inner bark of a small tree. Pepper comes from the fruits of one plant, ginger from the root of another, and mustard from the seed of still another. Nutmeg and mace come from the same tree. Nutmeg is the kernel of a fruit that looks a little like a peach. Mace is the skin that clings to the hard thin shell of this kernel. All these spices are usually ground into a fine powder.

Allspice is a berry. It has this name because it tastes like several kinds of spices mixed together. Another name for allspice is pimento. Have you eaten olives stuffed with pimentos, or cheese flavored with them?

Vanilla, which is the flavor that many Americans like best in ice cream, is not exactly a spice, but is used to make things taste good just as

spices are. It comes from a special kind of bean that grows well in Mexico.

The people in this picture are picking peppers.



The story of Columbus in your history books says that he sailed from Spain hoping to find a new way to some far-away islands. They were known as the Spice Islands, and are near the coast of Asia.

For many years the people of Europe had been sending to those islands and to India for the spices that grew there.

Does it seem strange that spices were so important in those days? Have you wondered why such long voyages were made just to get them?

People needed spices much more than we do, because in those days there were no refrigerators in which ice kept meats from spoiling. People



often had to eat meat which was not so fresh as it ought to have been. Its taste was not pleasant. Spices were used to make the meat taste better. They were used also to preserve meat through the winter.

In those days people depended upon meat more than we do because they had fewer vegetables. There were some seasons when they had no vegetables at all. People had not learned how to can them, or how to pack them in glass jars so that they would keep a long time.

These people are preparing cinnamon.



### *Sugar*

Another thing that was taken from Asia to Europe was sugar. At first, about a thousand years ago, it was used as medicine. It cost a lot

of money. A man in Italy once had six pounds at one time. Many people thought that this was altogether too much for one family to own.

Kings and emperors built many beautiful large palaces from the money they got by making the people pay taxes on the sugar they bought and sold. Until about the time of Columbus, it was hard for poor people to buy sugar. When they wanted something sweet, they almost always used the honey made by bees.

In our time, there is plenty of sugar for everyone. Americans use more of it than any other people. In just one year they use enough sugar to give one hundred pounds to every man, woman, and child in the country.

Much of our sugar is made from sugar cane. This grows best in hot, moist countries, such as Cuba and Porto Rico in the West Indies, and Hawaii and the Philippine Islands in the Pacific Ocean. It also grows in the southern part of our own country where it is warm.

### *A Sugar Plantation, and a Sugar Mill*

Last winter, George's father and mother went to Cuba for a vacation. George did not go with them. He was in school. Mother and Father told him they would send him interesting presents

and letters, while they were away, and they did.

One day, George received a box containing several pieces of sugar cane. In the same mail there was a letter which told about the visit Mother and Father made to a sugar plantation. Here is the story that was in the letter.

The sugar plantation looked something like a great field of corn. The sugar canes are much taller than cornstalks, but they are jointed like cornstalks and they have long, broad, pointed leaves. There is a bunch of flowers, a little like a corn tassel, at the top.

The sugar canes grow in long, straight rows, with wide paths between them. In the rows the plants stand close together. When the wind blows, the waving leaves make just the same soft pleasant sounds you hear in a cornfield.

In the sugar plantations we saw fields where little plants are just showing above the ground, some where the stalks are half grown, and others where they are ready to be cut and taken to the sugar mills. Some fields are planted at one time and some at another, so that right through the year there will always be some sugar cane that is ready to harvest.

We watched some of the men at work planting

sugar cane. We saw them laying small pieces of stalks in deep trenches, or ditches. Each piece has two or three seed buds, or eyes, like the ones in potatoes that are used for planting. Some plantation owners have machines that do the planting, but here the men were doing it by hand. Before they covered them with earth, the men were careful that all the pieces of cane made a straight line.

We enjoyed watching the harvesting, too. Look at the picture on page 315. Men cut through the thick stalks close to the ground because the lower parts have more juice in them than the upper parts. It is from this juice that sugar is made.

The cutters use heavy knives, with a sharp edge on one side, and a hook on the other. They pull off the leaves with the hook. It would save men much hard, slow work if someone would invent a machine for harvesting sugar cane, but so far no one has made a good one.

At harvest time, on some plantations, fires are set to burn down a few rows at a time. The fires burn off the leaves and destroy the weeds that spring up between the stalks. They do not harm the stalks themselves. While the burning is going on, a thick sweet-smelling smoke fills the air over the fields.

On the plantation, we visited a mill in which the stalks of sugar cane were being crushed between rollers. They were crushed over and over again until all the juice had been squeezed out.



The juice is dark and muddy-looking. It has to be strained until all the dirt has been removed. Then it is boiled and boiled, and boiled again. As it boils, the liquid grows clearer and clearer, and thicker and thicker.

At last it turns into a mixture of sugar crystals and molasses. This is spun around and around, very fast, in a machine like a wire basket. Its sides are made of wire like window screens. The spinning sends the brown molasses out through the holes, but the yellow crystals stick to the inside of the basket.

The coarse yellow sugar is dried, packed in bags, and sent in steamships to factories. There are many of these factories in our own United States. There the sugar is washed and boiled some more. It is dried again and sifted until it turns into white sparkling sugar.

This story was so interesting that George took the letter to school and read it to the children. He showed them his sugar cane, too.

The children were interested when a box of fresh sugar cane came to Caroline, one of the girls in the class. It was sent to her by her aunt who lives in Louisiana. Caroline had written and told her about their study of sugar in school. This American sugar cane was so fresh and tender that the children cut the stalks, washed the pieces, and sucked and chewed on them. They enjoyed the sweet sap.

After hearing the story of sugar cane, the children talked about sugar in other plants, and in fruits and vegetables.

They found that we eat sugar in many ways. We eat it in dates and in raisins. We eat it in fruits of all kinds and in berries. There is a kind of sugar in milk, and in sweet corn, peas, sweet potatoes, squash, beets, and other vegetables.



## *Beet Sugar*

The children found that about a third of our sugar is made from a special kind of big white beet. Most of these are raised in Colorado, Nebraska, Utah, Michigan, and other States near them in the central and western part of our country.

It is hard to tell the difference between sugar made from beets and sugar made from sugar cane. Both kinds look the same and taste the same.

## *Maple Sugar*

And then, of course, the children talked about maple sugar. They became so interested in talking about maple sugar that they decided to make a story about it for George to send to his father and mother. Here is their story.

Maple syrup, which is boiled down to make maple sugar, is the sweet sap of one kind of maple tree. In the spring of the year, the sap begins to run up through the trunks of the trees.

At the right time, men bore a small round hole in the trunk of each sugar maple tree, a little way above the ground. They drive a spout into the hole, and hang a bucket under the spout.

The clear white sap drips slowly into the bucket. Every day, buckets full are taken to a building

known as the sugar house. It is boiled until it grows thicker and thicker, and turns into the gold-colored maple syrup that tastes so good on waffles, or pancakes, or rice. If the sap is boiled longer still, it turns to sugar.

A book called *Maple Sugar Time*, by Royce S. Pitkin, tells how two children visited their grandfather on his Vermont farm at "sugaring-off time" and what they saw and did.

There are several new inventions that are used in the making of maple syrup. In the long-ago days, none of these machines had ever been heard of. "Sugaring-off time" was a time to which the boys and girls looked forward because it gave them a chance to have much fun.

The children of a neighborhood, and also their fathers and mothers, met at the sugar camp. This was their name for the place where the sugar maples grew. While they worked, they sang jolly songs and told stories. Some of the people worked all day.

At night, others took their places, for after the boiling of the sap once started, it had to go on. They filled great iron kettles full of sap, and lighted big wood fires under them. Many people were kept busy cutting more wood, for the fires had to be kept blazing. Others watched carefully to see

that the kettles did not boil over and that the syrup did not burn.



The boys whittled out wooden paddles. You will soon find out what these were for. Every few minutes, the boys took a little syrup from the kettles and dropped it on the snow. If it sunk in, it meant the syrup must be boiled some more. If it stayed on top of the snow and cooled in a thin sheet, it made "maple wax."

This the boys thought the nicest candy in the world, and everyone ate his fill. If anyone bit too hard into a ball of maple wax, he could not open his mouth until it melted. But the wax tasted so good that no one cared if his jaws stuck together for a few minutes.

While most of the people were feasting on

maple wax, some of the men kept dipping a bent twig into each of the kettles. When they pulled the twig out, they found some of the syrup stretched like a covering of a soap bubble across the loop. If they could blow a bubble in the loop, they swung the kettles away from the fires and called everybody to come and help.

It was time to stir the syrup and to make the maple sugar! Up rushed all the boys and girls and the men and women. Each took one of his whittled wooden paddles and found a kettle where there was a place for him to stir. Everyone stirred with all his might. This made the sugar light colored and smooth.

When the Pilgrims came to America, they found the Indians making maple syrup and maple sugar. First, they cut holes in the trees with their tomahawks. Next, they drove in spouts made of curved pieces of bark. They collected the sap in pails made of birchbark, and poured it into deep tubs made of clay.

To make it boil, they kept dropping in stones heated very hot in the fire. Then they poured the syrup into flat clay platters and let it freeze. They skimmed off the ice and threw it away. In the bottom of the platters they found sugar.

The children enjoyed making their story, and

George was happy to send a copy of it to his father and mother.

### *Salt*

In the story about sugar, we learned that there is sugar in many of our foods. There is salt in some of our foods, too. We get a little when we eat meat, oysters, clams, lobsters, eggs, some of the green vegetables, and wheat, rye, or oats.

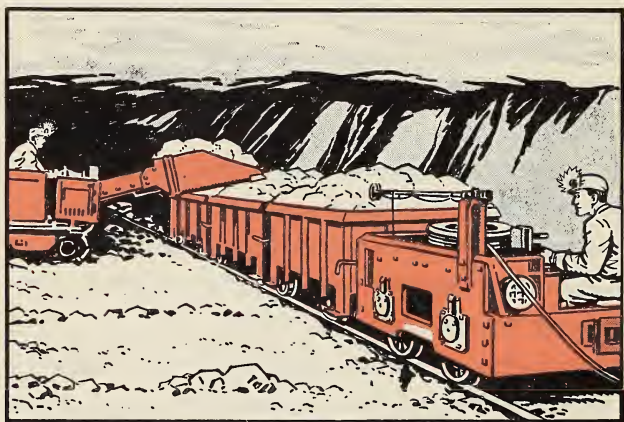
Our bodies need more salt than is found in these foods so there is usually a salt shaker on the table at our meals. Even though Mother has put a little into the food when she cooked it, some of us like a little more. Salt is used in making butter, cheese, bread, ice cream, and different kinds of pastry and cake.

Coarse salt is mixed with the ice used in refrigerator cars. The same mixture is used in the refrigerating machinery of ships, and in the cold-storage buildings where supplies of meat and vegetables are kept before they are sent to the markets.

People and children enjoy salt in their food. Animals do, too. If you live on a farm, you know this. Farmers keep large bricks of salt around where the animals are, so that the sheep and cows and horses can go and lick as much salt as they want.

Some farmers spread salt on the rocks in the pastures. The animals soon know where they can find the salt, and they look for it. Sometimes the farmer calls them after he has spread the salt about. The animals come running to get it.

Even wild animals, like deer, sometimes venture close to camps and farmhouses, hoping they may find some salt. If they find a place where there is salt, they will go to it often to get more. Sometimes they find salt rocks.



Most of the salt we buy is dug out of mines or pumped out of wells deep under the ground. It comes from the layers of salt, like rocks, which have formed underground. Long ago salt lakes covered the land. Finally the water dried up and just the salt was left. Then these layers of



salt were covered with layers of soil. The salt was pressed into salt rocks.

In the salt mines, machinery digs the salt from far below the surface of the earth, just as if it were coal. Sometimes the workers use powder to blow the hard salt rocks to pieces.

Elevators carry the salt up to the mills, where it is crushed by machinery. Then it is washed, dried, ground up, and sifted. Sometimes the drying is done by heat from huge furnaces. Sometimes the salt is spread out-of-doors and dried by the sun. There are many salt mines and salt mills in Michigan.

There is another way of getting salt out of the earth. Sometimes two iron or steel pipes, one inside of the other, are driven into the earth until they reach the layer of salt. Then water or steam is sent down through the small inner pipe. It dissolves some of the salt. Then the mixture of salt and water is pumped up through the large outside pipe. It goes pouring into great tanks.

Little by little, the water turns into vapor and floats away in the air. The salt is left in the bottom of the tanks. Then it is sent through the different machines in the mills.

In and near the mills, you would see great piles of shining white salt, like snowdrifts. Some is

coarse, and some is in small grains. The salt that is used on our tables has been ground and ground until it is almost as fine as flour.

Some salt is made by collecting water from the ocean or from salt lakes. This is the oldest way of all. In several far-away parts of the world, the people use windmills to pump the water. They have big flat fields where the ground has been rolled hard. Sometimes the fields are coated with clay. This is to keep the water from soaking into it.

Water is pumped on this hard floor until it is two or three inches deep. It is left standing a week or more. The hot sun and the wind dry up all the water, but leave the salt on the ground. Then the people take wooden scrapers and push the salt together in heaps. After that they pound it up as fine as they can.

Salt that is made in this way is not glistening white as our table salt is. It is likely to be brown in color. In the long-ago days in our country, the people used salt that was in big brown lumps.

After many years the makers learned how to make finer and whiter salt, but it was a long time before the people would buy it. They were used to the coarse brown kind, and they thought

the fine white salt could not have as much taste as the old-fashioned kind.

The Indians in our country would travel many miles to get salt. When they found pools of salt water, they dug holes in the ground close to the pools, and filled them with the salt water. The sun and the wind dried the water, but the salt stayed in the hole. Then the Indians gathered up the salt. Indians who lived near the ocean boiled the water until there was nothing but salt left.

In many parts of the world today, salt is hard to get. To the oases in the great deserts in Africa, the people come in crowds to meet the caravans that bring salt once a month.

The people pay for the salt they buy with dates and other things. To some of the children there, salt is as much a treat as candy is to you.

In China, little cakes of salt were once used as money. The picture of the emperor was stamped on each cake. This seems to us a strange way to use salt, but it shows us how valuable salt was to those people.

*Aunt Martha's Corner Cupboard*, a book by Mary and Elizabeth Kirby, tells about sugar, salt, and pepper. It tells also about cocoa, coffee, tea, and rice.

## Food Customs in Other Lands

IT IS fun to go to a friend's house for a meal, isn't it? Let us imagine that we are traveling in some far-away countries, and have been invited to a meal by different friends who live there. Let us learn something about the food customs in other parts of the world.

First, let us imagine that we have friends in China and in Japan. In these two countries many of the people have food customs that are wholly different from our own.

### *In China and Japan*

Instead of knives and forks, the people of China and Japan use chopsticks. These are two long, narrow pieces of wood, or bone, or ivory, much like lead pencils. One end is more pointed than the other. The people hold them between two fingers of one hand, and use them like tongs. Before it is brought to the table, each kind of food is cut into pieces just the right size to pick up easily. How would you like to try eating with chopsticks?

At a dinner in Japan, you would kneel on thick

cushions on the floor. Your dishes and bowls of food would be brought on a tray, which the waitress would set on a little wooden stand about twelve inches high.



You might first have some sugared beans, or sweetened rice, or perhaps the candied petals of some flower. Then would come soup, one kind of fish boiled, another kind raw, some boiled vegetables, some pickled vegetables, and last of all some boiled rice and barley.

The grown people would have tiny cups of tea, without cream or sugar. The Japanese begin their dinner with something sweet instead of having a sweet dessert as we do. This is because so many of their other foods do not have much taste. They eat many pickles for the same reason.

If we watched the dinner being cooked, we should not see a big stove like our mother's. We should not see a fireplace such as the Pilgrims used. In many Japanese homes we should see just a small metal box full of red hot charcoal, which can be carried from one room to another.



In most homes in China, the cooking stoves are huge clay bowls built into a brick or stone foundation. There is a place for a charcoal fire underneath. Only one thing can be cooked at a time, so it is slow work to prepare a dinner. Cooked food is often sold on the streets.

Some of the people eat rice at three meals every day. Sometimes they have dried fish with it, and sometimes eggs, mushrooms, ginger, pickles, or barley cakes.

A roasted shark's fin is a great treat. When they have other meat, it is duck or chicken or pork. They have the same kinds of vegetables that we do, and many that we do not have.



The Chinese cook some kinds of seaweed, and also the stalks of water lilies. Sometimes they serve melon seeds before dinner. They have a special kind of bean, named a soy bean. They make gravy for vegetables, omelets, and meat cakes from these beans.



At special dinners, the Chinese have bird's-nest soup. They do not make it from the kind of birds' nests that we see in our trees, but from the lining of swallows' nests. It is a sort of jelly and looks like fluffy white wax. The swallows build these nests high up on steep cliffs. Climbing for them is dangerous. But the Chinese are willing to risk a fall for the sake of something they think as delicious as bird's-nest soup.

## *In Arabia*

Now let us imagine that we have traveled to Arabia, another country in Asia. There we find some of the people living in tents. They are herdsmen who raise many horses, sheep, and goats, and a few cattle. They have to move from one grazing ground to another to find food for their animals, because these herds quickly eat all the grass in any place.

It is evening. We have just come to an Arab herdsman's tent. We must stop and eat with him, since if we do not he will be angry.

The family is sitting in a circle, on the ground, just outside their tent. In the center of the circle are three big wooden bowls. One contains stew made of mutton, or goat's meat, and peas, beans, and spices. Another bowl is filled with chopped potatoes cooked in oil. The third bowl has something that might be either soup or pudding. It is made of sour milk.

Beside each person are several round sheets of bread. They are larger than this book when it is opened, and as thin as cardboard. Each person has also a little copper cup, without any handle, filled with thick black coffee which is very hot. There are no knives, forks, or spoons.

One of the boys tears off a strip of bread, folds it to make a sort of spoon, and dips out some stew for us. We are expected to eat the bread as well as the stew, but we find it as hard to chew as rubber. The stew itself tastes like the Irish stews we sometimes have at home.



The father sees that we do not know exactly what to do with the bread. He takes another strip and holds it over a little iron stove in which a good hot fire is burning. Soon the bread is as soft as cloth. It is quite good and we help ourselves to the stew and the potatoes. We eat several pieces. Once or twice, as we try to use our piece of bread, we break it, but the Arabs smile and pass us more. We are given some of

the potatoes on wooden plates and some of the soup or pudding in wooden bowls.

Our Arab friends tell us that they use wood instead of glass or other kinds of dishes because the wood does not break easily. Bowls made of copper, like the coffee cups, would make too heavy a load when the Arabs moved their camp.

We notice that the mother of the family hides the bread away inside the tent as soon as the meal is over. She laughs when she tells us that she does not want the smaller children to find it. Little Arab boys and girls like bread as much as we like cake.

Sometimes, instead of baking thin slices, their mother fries lumps of dough in fat, and makes a sweet roll something like our doughnuts.

The Arab herdsmen often have to go several days without bread. They get flour only when they go to an oasis. They pay for it with meat and milk from their sheep, camels, and goats, and the butter and cheese that they churn from this milk.

Milk is their chief food. They get plenty of it from their flocks of animals. They think sour milk keeps them strong and well. We notice a big leather bag of sour milk hanging up in the tent. The Arabs tell us that each day, when

they milk their animals, they put the milk into a wooden tub near the fire.

By evening the milk has turned sour, and the Arabs pour it into the leather bag. When they travel, they sew up the bag like a big bottle. The leather keeps the heat of the sun from warming the milk. The Arabs carry water in leather bottles, too. They usually boil it when they make tea or coffee.

### *The Pygmies of Africa*

Now let us visit some of the strangest people in the world, the pygmies in the middle of the thick hot jungles of Africa. They are tiny Negroes. You would think that even the men were little boys, until you noticed their crinkly beards.

They never move to new homes and they never travel far. They never learn about new kinds of food. They live on whatever they can get near their homes.

All the land is thickly covered with huge trees. Their trunks go up and up until their branches almost shut out the bright light of the hot sun. Only a dim greenish light gets into the jungle.

The pygmies are great hunters. They know everything about the animals of the jungle, and are not afraid of even the largest and fiercest of them.

Roasted monkey is the pygmies' favorite food. The pygmies also hunt big turtles and their eggs. They search for little lizards, too. They climb trees and find birds' eggs. They dig up roots and pick fruits and berries. They are fond of some kinds of beetles, grasshoppers, and caterpillars, which they dry or roast over the fire. The pygmies like roasted field mice, too.

The boys think honey is a great treat. They hunt the nests of wild bees high up in the giant trees. They climb up until they find the hole where the bees live. They reach in with their bare hands and pull out a large lump of honeycomb with the honey dripping from it. There are often bees clinging to it, but the boys do not mind the bees at all. They never get stung.

At meals, the pygmies sit on the ground in a circle, with a big kettle of food in the center. The meal may be boiled elephant's foot, or boiled crocodile meat, with the juice of some fruit. It may be a stew made from buffalo ribs, the leg of a wild pig, or some kind of fish.

The children and their fathers and mothers eat their meals from small plates or baskets made of grass. They have to eat with their fingers, because they have no forks or spoons.



## *How Cooking was Discovered*

The Pygmies and some of the other people in Africa live just about as simply as the cave men, who were almost the first people in the world.



The very first men who ever lived in the world knew nothing about the use of fire. They ate all of their food raw. By the time of the cave man, someone had discovered how to cook. At first, the cave men built fires in front of their caves just to frighten wild beasts away, and to keep themselves warm.

Perhaps the first roasted meat that anyone ever tasted was cooked by accident. It slipped from someone's hand and dropped into the fire. Some boy or girl may have pulled the burned meat out of the ashes while it was still hot. He

may have burned his fingers, and popped them into his mouth to cool them. Some little pieces of meat had stuck to his fingers. In this way, he got his first taste of meat that had been cooked. He thought it nicer than raw meat, which he had always eaten before. After this, probably, all his friends cooked their meat.

The cave men had no matches. They learned how to make a fire by rubbing two sticks or knocking two stones together until they made sparks. They caught the sparks on dry grass and blew on them until a flame came. Then they piled on twigs and small branches of trees. There are people in the world today who make fire in this same way.

### *The Eskimos*

The Eskimos, who live in the cold lands near the North Pole, are hunters and fishermen, like the pygmies and like the cave men of long ago. They have very little to eat except the meat of wild animals and fish. There are no grassy pastures for cattle and sheep, even if these animals could live in the climate.

It is so cold that no vegetables or fruits except a few small berries can grow. The warm part of the year, when the Eskimos can find berries, is

only about two months long. How long is the growing season near your home?

Along the seashore of the land where the Eskimos live, there are many wild birds in the warm part of the year. There are so many that a man can catch, in a few minutes, more than his family can eat in many days. He has a net on a long pole, which he swings back and forth over his head. With every swing he catches a netful of birds. He and his family eat some of these birds and freeze the rest, which they save to eat later. They fasten the frozen birds on the outside of their house and use them when it is too cold to catch any more.

When their father goes out on the rocks along the seashore to catch birds, Eskimo boys and girls go with him to hunt eggs. They hold the eggs up against the sun to see if the inside has begun to change into a little bird. If it hasn't, they suck out the white and the yolk, and swallow them raw.

After they have eaten all the good eggs they want, they give the rest to their father who freezes them. The boys and girls like frozen eggs as well as you like lollipops.

The chief food of the Eskimos comes from the fish, the seals, and the walrus that live in the sea.

Sometimes they hunt the musk oxen, and the reindeer that wander in large herds over the ice. They also hunt polar bears and the Arctic hares, which are very large white rabbits. The fish they catch are usually cod and salmon.

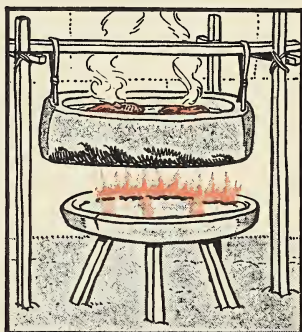
Seals are the most valuable of all the animals the Eskimos hunt. They use their meat for food, their skins for clothing, for tents, and for covering their canoes, or kayaks as they are called.

The Eskimos make oil by melting the fat or blubber of seals. They burn the oil in the lamps which heat and light their homes. They cook on these lamps, too. The lamps are made of soft stone, hollowed out like a clam shell. For wicks, the Eskimos use pieces of dried moss, dipped into the oil.

If the Eskimos are very hungry, they do not wait to cook their meat. They start eating the raw meat at once, and drinking the warm blood of the seal or other animal.

The favorite part of a seal is the kidney or the liver, just as some of us like the heart or the liver of a chicken or a turkey. The best part of a fish, the Eskimos think, is the eye. They are fond of the skin of young whales. They like anything that is fat or greasy.

Once an explorer gave a boy a wax candle. Instead of lighting it, the boy surprised the explorer by eating it. The Eskimo children often dip their fingers in whale oil and then suck them.



Instead of drinking from glasses, the Eskimos often use cups made from the horns of musk oxen. They make their knives from pieces of copper tied to a stick of wood. Explorers now go to the Arctic much oftener than they used to. Whenever they can, they take dishes, tools, and food supplies that make the Eskimos' life easier than it was before any white men went to their part of the world.

*Many People in Other Countries Live Just As We Do*

In some of our stories we have told you about strange foods in Africa, South America, Hawaii,

and the Philippines. We must not think, however, that all the people in these lands eat foods and live in ways that are so different from our own. There are cities in the southern part of Africa and along the seacoasts of South America which are much like our own. The people there have foods like ours. There are also some cities in China, Japan, Hawaii, and the Philippines where the people live very much as we do. The strange things that we have been seeing are in the parts of these lands where no white people live.

Now, if we could travel from one country to another in Europe, we should see ways much like our own.

If we could visit the homes of the people in France and in Germany, in England and Sweden, in Italy and Switzerland, and in other countries, we should find many like ours. At meal time we should see the table covered with a cloth, with pretty dishes on it, with silver that shines, and with good food of all kinds.

Many of the very best dishes that are used in our homes come from Europe. Germany, France, England, and Sweden make some china that is better than any we make in our country. Good china comes from Japan, and from China, too.



Much of the nicest linen for our tables comes from Europe. The people over there not only make fine, smooth linens, but they are wonderful at decorating things. Some of their linens are embroidered and have fine handwork that makes them attractive. They are lovely in color as well as in pattern.

We like good glass on our tables, and for some of the best of it we go to Europe. Sweden is a country that makes beautiful glass. Italy sends us much pretty glass, also.

The people of Sweden make beautiful silver. So do the people of many other European countries. We make beautiful silver, too.

So while we were going from country to country in Europe, we should see things that please us very much. We should want to bring home for our own dining room some of the linen and some of the dishes we had seen. We might wish to learn to cook food, as they do, too.

The dishes and the linens in Europe are cheaper than in our own country. Because of this, even the poor people can have beautiful things. In some of the smallest cottages where the food is very plain, we find dishes as beautiful as the richest people in our country can have.

We also find these poor people using the finest

linens, too. They know how to make lovely things and they are careful of them because they know how much work it takes to make them.

The dishes and the linens in use in some of these cottages in Europe are very old. They have been used by the mothers and fathers, the grandmothers and grandfathers, and some are even older than that.

Sometime, when you are helping your mother to wash the dishes, ask her to let you look at some of her china. On the back of each plate and each cup and saucer, there is usually a mark that tells where it was made. When you read this mark, you can tell whether the dishes were made in our own country, or in one of the countries of Europe, or in China or Japan. You will be reminded of the imaginary journeys to far-away lands that you have made in this book.

Here are some other books that you will enjoy. *Little Folk of Many Lands*, by Lulu M. Chance, and *Child Life in Other Lands*, by H. Avis Perdue, are two books that tell about the everyday life of boys and girls in far-away countries.

*Children of Many Lands* and *Homes Far Away* are two more of the same sort. They are by James Fairgrieve and Ernest Young. *Around*

*the World with the Children*, by Frank G. Carpenter, is still another. We hope that you will be glad to learn all you can about the boys and girls of foreign lands.

It will be interesting to discover how their homes, food, and clothing are different from yours. It will be interesting to discover that sometimes they are much like yours.

The more you learn about home life around the world, the more you will think of the people of other countries as people you would like to know.

## Studying About Foods

**T**HERE are many ways to learn about foods. You can read books and learn many interesting facts. You can do things that will teach you other facts. Here are some of them:

1. Plant a garden. Grow in it as many kinds of foods as you have room for. Watch the plants that grow from the tiny seeds. Watch the foods ripen. When they are ready, serve them at your table.

2. Make a collection of foods of different kinds. With your friends, plan exhibits of fruits, vegetables, or nuts. Perhaps you can have an exhibit of preserved food or cooked food, too.

3. When you are riding in the car, or on trains, find out, by looking about you, as many things about foods as you can. Do the same thing if you go to some foreign country. Then write stories about your trips. "Fun at the Farm," "A Day in the Country," "My Vacation in the Country," "A Drive to the Country," "A Visit to a Grain Elevator," and "A Visit to a Canning Factory" are good titles for stories. What other titles can you think of?

4. Draw pictures of foods of different kinds. Fruits and vegetables are interesting to draw. It is worth while, too, to tell the story of your garden by drawing or painting pictures. You can begin with the planting of the seed, and watering the ground. Then you can show how the plant looks when it is little and when it is big. You can show how it is harvested, and how it is prepared for eating.

5. Magazines often have colored pictures of foods. Cut out some of these pictures and paste them in a scrap-book. You can find pictures of meats, of fruits and

vegetables, and of canned foods. You can find pictures of cereals, jellies, and preserves.

6. Collect pictures of pleasant kitchens and dining rooms.

7. You can find pictures of the trucks, railroad cars, and ships that carry foods to the markets. Pictures of fishing boats are interesting, too.

8. Make a collection of the wrappers from the cans of meat, fish, soups, fruits, vegetables, and other foods. Your mother will be glad to help you. From these wrappers you can tell where the canning was done. One little girl made a collection of the wrappers from cans of fish. She had many that came from France and Norway. From how many States and countries can you find wrappers?

9. Make a "Book of the States." You can have a page or several pages for each State. Begin with your own State. Show what foods come from other States by pasting in pictures of the foods for which they are famous.

10. If you have a camera, you can make an interesting book by taking pictures instead of cutting them out of the papers and magazines.

11. If you like to write stories or poems, you can make a book of your own stories and poems about foods.

12. If your father is a farmer, he may be willing to let you have a roadside market. Then you can have the fun of arranging the vegetables and fruits and other foods and of selling them.

13. Often you can help in your home to prepare some of the food you eat. Boys as well as girls like to cook, and to set the table.

14. At camp, or on a long hike, do your share of helping to prepare the food. It tastes especially good when you cook it and eat it out of doors.

## Some New Words

This list tells the meaning of words in this book which may be new to you. It also helps you to pronounce these words.

- Binder** (byn'der). A machine that cuts the grain and ties it into bundles.
- Buffalo** (buff'-a-lo). A wild ox, with thick rough hair on the front part of his body.
- Canal** (kan-al'). A ditch dug across land to carry water to fields or orchards. There are also canals big enough for boats to go on.
- Cathedral** (kath-e'-dral). A church in which a bishop has his chair, or throne. A bishop is the chief clergyman in a church district.
- Cereal** (see're-al). Any grass the seeds of which can be made into food.
- Cure**. To prepare food for keeping by drying or salting it.
- Dough** (dō). The soft mass of moistened flour and other things, from which bread, macaroni, and spaghetti are made.
- Furrow** (fur'oh). The long narrow cut made in a field by a plow.
- Harpoon** (har-poon'). A spear with a rope tied to it.
- Hold**. The lowest part of the inside of a ship.
- Milldam**. The wall that holds back the water of a small river. This makes a pond, from which the water flows slowly over the mill wheel and turns it.
- Orchard** (or'chard). Land where fruit trees grow.
- Plantation** (plan-tay'shun). Land where groups of plants have been set out.
- Range** (raynj). A long, wide piece of land where cattle or sheep graze.
- Refrigerator car** (ree-frij'e-ray-tor). A car that is kept cold inside so that meats, fruits, and vegetables can be carried without spoiling.
- Reservoir** (rez'er-vwor). A place where water is collected and stored.
- Rodeo** (roe-day'-oh). An exhibition of the work of cowboys.
- Scythe** (sythe). A two-handed long curved knife, on a long bent handle. It was used in the olden days for reaping grain.
- Sickle** (sik'l). A one-handed short curved knife on a short handle.
- Shaduf** (shar-doof'). An old-fashioned machine used in Egypt to lift water from the Nile River.
- Sheaf** (sheef). A bundle of wheat
- Shock** (shok). Several armfuls of cornstalks, or bundles of grain, set up on end together.
- Silage** (sy'layj). Food for animals which has been preserved and stored in a silo.
- Silo** (sy'low). An airtight building in which food for animals is preserved and stored.
- Spring**. A small stream of water which gushes up from the earth.
- Storage tanks**. Tanks in which water is collected and kept for use.
- Terrace** (ter'is). A level piece of earth, raised like a wide step.
- Tractor** (trak'tor). An automobile or engine used for pulling plows and other farming machines.
- Trawler** (traw'ler). A fishing boat that drags a net, called a trawl, through the water.
- Treadmill** (tred'mil). A wheel or endless belt that turns machinery when a person or an animal walks on it.
- Truck farm**. A farm on which vegetables are grown for market.
- Tuber** (too'ber). The thick part of the underground stem of such plants as the potato.
- Vineyard** (vin'yard). A piece of land planted with grapevines.
- Water wheel**. A wide wheel with steps around the outside of the rim. Some water wheels have buckets. When men walk on the steps, the wheel turns. The buckets dip into a river and raise water from it.
- Yeast** (yeest). Something mixed with dough to make bread rise.



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